THE WORKS OF EDGAR ALLAN POE

VOLUME IV

WILLIAM WILSON, BON BON,
THE TELL TALE HEART,
EUREKA

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WILLIAM WILSON

WILLIAM WILSON

What say of it? what say CONSCIENCE grim,
That spectre in my path?

Chamberlain's Pharronida.

LET me call myself, for the present, William Wilson. The fair page now lying before me need not be sullied with my real appellation. This has been already too much an object for the scorn—for the horror—for the detestation of my race. To the uttermost regions of the globe have not the indignant winds bruited its unparalleled infamy? Oh, outcast of all outcasts most abandoned!—to the earth art thou not for ever dead? to its honors, to its flowers, to its golden aspirations?—and a cloud, dense, dismal, and limitless, does it not hang eternally between thy hopes and heaven?

I would not, if I could, here or to-day, embody a record of my later years of unspeakable misery, and unpardonable crime. This epoch—these later years—took unto themselves a sudden elevation in turpitude, whose origin alone it is my present purpose to assign. Men usually grow base by degrees. From me, in an instant, all virtue dropped bodily as a mantle. From comparatively trivial wickedness I passed, with the stride of a giant, into more than the enormities of an Elah-Gabalus. What chance—what one event brought this evil thing to pass, bear with me while I relate. Death approaches; and the shadow which foreruns him has thrown a softening influence over my spirit. I long, in passing through

the dim valley, for the sympathy—I had nearly said for the pity—of my fellow men. I would fain have them believe that I have been, in some measure, the slave of circumstances beyond human control. I would wish them to seek out for me, in the details I am about to give, some little oasis of *fatality* amid a wilderness of error. I would have them allow—what they cannot refrain from allowing—that, although temptation may have erewhile existed as great, man was never *thus*, at least, tempted before—certainly, never *thus* fell. And is it therefore that he has never thus suffered? Have I not indeed been living in a dream? And am I not now dying a victim to the horror and the mystery of the wildest of all sublunary visions?

I am the descendant of a race whose imaginative and easily excitable temperament has at all times rendered them remarkable; and, in my earliest infancy, I gave evidence of having fully inherited the family character. As I advanced in years it was more strongly developed; becoming, for many reasons, a cause of serious disquietude to my friends, and of positive injury to myself. I grew self-willed, addicted to the wildest caprices, and a prey to the most ungovernable passions. Weak-minded, and beset with constitutional infirmities akin to my own, my parents could do but little to check the evil propensities which distinguished me. Some feeble and ill-directed efforts resulted in complete failure on their part, and, of course, in total triumph on mine. Thenceforward my voice was a household law; and at an age when few children have abandoned their leading-strings, I was left to the guidance of my own will, and became, in all but name, the master of my own actions.

My earliest recollections of a school-life are con-

nected with a large, rambling, Elizabethan house, in a misty-looking village of England, where were a vast number of gigantic and gnarled trees, and where all the houses were excessively ancient. In truth, it was a dream-like and spirit-soothing place, that venerable old town. At this moment, in fancy, I feel the refreshing chilliness of its deeply-shadowed avenues, inhale the fragrance of its thousand shrubberies, and thrill anew with undefinable delight, at the deep hollow note of the church-bell, breaking, each hour, with sullen and sudden roar, upon the stillness of the dusky atmosphere in which the fretted Gothic steeple lay imbedded and asleep.

It gives me, perhaps, as much of pleasure as I can now in any manner experience, to dwell upon minute recollections of the school and its concerns. Steeped in misery as I am—misery, alas! only too real—I shall be pardoned for seeking relief, however slight and temporary, in the weakness of a few rambling details. These, moreover, utterly trivial, and even ridiculous in themselves, assume, to my fancy, adventitious importance, as connected with a period and a locality when and where I recognise the first ambiguous monitions of the destiny which afterwards so fully overshadowed me. Let me then remember.

The house, I have said, was old and irregular. The grounds were extensive, and a high and solid brick wall, topped with a bed of mortar and broken glass, encompassed the whole. This prison-like rampart formed the limit of our domain; beyond it we saw but thrice a week—once every Saturday afternoon, when, attended by two ushers, we were permitted to take brief walks in a body through some of the neighboring fields—and twice during Sunday, when we were paraded in the same formal

manner to the morning and evening service in the one church of the village. Of this church the principal of our school was pastor. With how deep a spirit of wonder and perplexity was I wont to regard him from our remote pew in the gallery, as, with step solemn and slow, he ascended the pulpit! This reverend man, with countenance so demurely benign, with robes so glossy and so clerically flowing, with wig so minutely powdered, so rigid and so vast,—could this be he who, of late, with sour visage, and in snuffy habiliments, administered, ferrule in hand, the Draconian Laws of the academy? Oh, gigantic paradox, too utterly monstrous for solution!

At an angle of the ponderous wall frowned a more ponderous gate. It was riveted and studded with iron bolts, and surmounted with jagged iron spikes. What impressions of deep awe did it inspire! It was never opened save for the three periodical egressions and ingressions already mentioned; then, in every creak of its mighty hinges, we found a plenitude of mystery—a world of matter for solemn remark, or for more solemn meditation.

The extensive enclosure was irregular in form, having many capacious recesses. Of these, three or four of the largest constituted the play-ground. It was level, and covered with fine hard gravel. I well remember it had no trees, nor benches, nor any thing similar within it. Of course it was in the rear of the house. In front lay a small parterre, planted with box and other shrubs; but through this sacred division we passed only upon rare occasions indeed—such as a first advent to school or final departure thence, or perhaps, when a parent or friend having called for us, we joyfully took our way home for the Christmas or Midsummer holydays.

But the house!—how quaint an old building was

this!—to me how veritably a palace of enchantment! There was really no end to its windings—to its incomprehensible subdivisions. It was difficult, at any given time, to say with certainty upon which of its two stories one happened to be. From each room to every other there were sure to be found three or four steps either in ascent or descent. Then the lateral branches were innumerable—inconceivable—and so returning in upon themselves, that our most exact ideas in regard to the whole mansion were not very far different from those with which we pondered upon infinity. During the five years of my residence here, I was never able to ascertain with precision, in what remote locality lay the little sleeping apartment assigned to myself and some eighteen or twenty other scholars.

The school-room was the largest in the house—I could not help thinking, in the world. It was very long, narrow, and dismally low, with pointed Gothic windows and a ceiling of oak. In a remote and terror-inspiring angle was a square enclosure of eight or ten feet, comprising the *sanctum*, "during hours," of our principal, the Reverend Dr. Bransby. It was a solid structure, with massy door, sooner than open which in the absence of the "Dominie," we would all have willingly perished by the *peine forte et dure*. In other angles were two other similar boxes, far less reverenced, indeed, but still greatly matters of awe. One of these was the pulpit of the "classical" usher, one of the "English and mathematical." Interspersed about the room, crossing and re-crossing in endless irregularity, were innumerable benches and desks, black, ancient, and time-worn, piled desperately with much-bethumbed books, and so beseamed with initial letters, names at full length, grotesque figures, and other multiplied efforts

of the knife, as to have entirely lost what little of original form might have been their portion in days long departed. A huge bucket with water stood at one extremity of the room, and a clock of stupendous dimensions at the other.

Encompassed by the massy walls of this venerable academy, I passed, yet not in tedium or disgust, the years of the third lustrum of my life. The teeming brain of childhood requires no external world of incident to occupy or amuse it; and the apparently dismal monotony of a school was replete with more intense excitement than my riper youth has derived from luxury, or my full manhood from crime. Yet I must believe that my first mental development had in it much of the uncommon—even much of the *outre*. Upon mankind at large the events of very early existence rarely leave in mature age any definite impression. All is gray shadow—a weak and irregular remembrance—an indistinct regathering of feeble pleasures and phantasmagoric pains. With me this is not so. In childhood I must have felt with the energy of a man what I now find stamped upon memory in lines as vivid, as deep, and as durable as the *exergues* of the Carthaginian medals.

Yet in fact—in the fact of the world's view—how little was there to remember! The morning's awakening, the nightly summons to bed; the connings, the recitations; the periodical half-holidays, and perambulations; the play-ground, with its broils, its pastimes, its intrigues;—these, by a mental sorcery long forgotten, were made to involve a wilderness of sensation, a world of rich incident, an universe of varied emotion, of excitement the most passionate and spirit-stirring. "*Oh, le bon temps, que ce siecle de fer!*"

In truth, the ardor, the enthusiasm, and the imperiousness of my disposition, soon rendered me a marked character among my schoolmates, and by slow, but natural gradations, gave me an ascendency over all not greatly older than myself;—over all with a single exception. This exception was found in the person of a scholar, who, although no relation, bore the same Christian and surname as myself;—a circumstance, in fact, little remarkable; for, notwithstanding a noble descent, mine was one of those everyday appellations which seem, by prescriptive right, to have been, time out of mind, the common property of the mob. In this narrative I have therefore designated myself as William Wilson,—a fictitious title not very dissimilar to the real. My namesake alone, of those who in school-phraseology constituted "our set," presumed to compete with me in the studies of the class—in the sports and broils of the play-ground—to refuse implicit belief in my assertions, and submission to my will—indeed, to interfere with my arbitrary dictation in any respect whatsoever. If there is on earth a supreme and unqualified despotism, it is the despotism of a master-mind in boyhood over the less energetic spirits of its companions.

Wilson's rebellion was to me a source of the greatest embarrassment; the more so as, in spite of the bravado with which in public I made a point of treating him and his pretensions, I secretly felt that I feared him, and could not help thinking the equality which he maintained so easily with myself, a proof of his true superiority; since not to be overcome cost me a perpetual struggle. Yet this superiority—even this equality—was in truth acknowledged by no one but myself; our associates, by some unaccountable blindness, seemed not even to

suspect it. Indeed, his competition, his resistance, and especially his impertinent and dogged interference with my purposes, were not more pointed than private. He appeared to be destitute alike of the ambition which urged, and of the passionate energy of mind which enabled me to excel. In his rivalry he might have been supposed actuated solely by a whimsical desire to thwart, astonish, or mortify myself; although there were times when I could not help observing, with a feeling made up of wonder, abasement, and pique, that he mingled with his injuries, his insults, or his contradictions, a certain most inappropriate, and assuredly most unwelcome *affectionateness* of manner. I could only conceive this singular behavior to arise from a consummate self-conceit assuming the vulgar airs of patronage and protection.

Perhaps it was this latter trait in Wilson's conduct, conjoined with our identity of name, and the mere accident of our having entered the school upon the same day, which set afloat the notion that we were brothers, among the senior classes in the academy. These do not usually inquire with much strictness into the affairs of their juniors. I have before said, or should have said, that Wilson was not, in the most remote degree, connected with my family. But assuredly if we *had* been brothers we must have been twins; for, after leaving Dr. Bransby's, I casually learned that my namesake was born on the nineteenth of January, 1813—and this is a somewhat remarkable coincidence; for the day is precisely that of my own nativity.

It may seem strange that in spite of the continual anxiety occasioned me by the rivalry of Wilson, and his intolerable spirit of contradiction, I could not bring myself to hate him altogether. We had, to

be sure, nearly every day a quarrel in which, yielding me publicly the palm of victory, he, in some manner, contrived to make me feel that it was he who had deserved it; yet a sense of pride on my part, and a veritable dignity on his own, kept us always upon what are called "speaking terms," while there were many points of strong congeniality in our tempers, operating to awake in me a sentiment which our position alone, perhaps, prevented from ripening into friendship. It is difficult, indeed, to define, or even to describe, my real feelings towards him. They formed a motley and heterogeneous admixture;—some petulant animosity, which was not yet hatred, some esteem, more respect, much fear, with a world of uneasy curiosity. To the moralist it will be unnecessary to say, in addition, that Wilson and myself were the most inseparable of companions.

It was no doubt the anomalous state of affairs existing between us, which turned all my attacks upon him, (and they were many, either open or covert) into the channel of banter or practical joke (giving pain while assuming the aspect of mere fun) rather than into a more serious and determined hostility. But my endeavors on this head were by no means uniformly successful, even when my plans were the most wittily concocted; for my namesake had much about him, in character, of that unassuming and quiet austerity which, while enjoying the poignancy of its own jokes, has no heel of Achilles in itself, and absolutely refuses to be laughed at. I could find, indeed, but one vulnerable point, and that, lying in a personal peculiarity, arising, perhaps, from constitutional disease, would have been spared by any antagonist less at his wit's end than myself;—my rival had a weakness in the faucial or guttural

organs, which precluded him from raising his voice at any time *above a very low whisper*. Of this defect I did not fail to take what poor advantage lay in my power.

Wilson's retaliations in kind were many; and there was one form of his practical wit that disturbed me beyond measure. How his sagacity first discovered at all that so petty a thing would vex me, is a question I never could solve; but having discovered, he habitually practised the annoyance. I had always felt aversion to my uncourtly patronymic, and its very common, if not plebeian prænomen. The words were venom in my ears; and when, upon the day of my arrival, a second William Wilson came also to the academy, I felt angry with him for bearing the name, and doubly disgusted with the name because a stranger bore it, who would be the cause of its twofold repetition, who would be constantly in my presence, and whose concerns, in the ordinary routine of the school business, must inevitably, on account of the detestable coincidence, be often confounded with my own.

The feeling of vexation thus engendered grew stronger with every circumstance tending to show resemblance, moral or physical, between my rival and myself. I had not then discovered the remarkable fact that we were of the same age; but I saw that we were of the same height, and I perceived that we were even singularly alike in general contour of person and outline of feature. I was galled, too, by the rumor touching a relationship, which had grown current in the upper forms. In a word, nothing could more seriously disturb me, (although I scrupulously concealed such disturbance,) than any allusion to a similarity of mind, person, or condition existing between us. But, in truth, I had

no reason to believe that (with the exception of the matter of relationship, and in the case of Wilson himself,) this similarity had ever been made a subject of comment, or even observed at all by our schoolfellows. That *he* observed it in all its bearings, and as fixedly as I, was apparent; but that he could discover in such circumstances so fruitful a field of annoyance, can only be attributed, as I said before, to his more than ordinary penetration.

His cue, which was to perfect an imitation of myself, lay both in words and in actions; and most admirably did he play his part. My dress it was an easy matter to copy; my gait and general manner were, without difficulty, appropriated; in spite of his constitutional defect, even my voice did not escape him. My louder tones were, of course, unattempted, but then the key, it was identical; *and his singular whisper, it grew the very echo of my own.*

How greatly this most exquisite portraiture harassed me, (for it could not justly be termed a caricature,) I will not now venture to describe. I had but one consolation—in the fact that the imitation, apparently, was noticed by myself alone, and that I had to endure only the knowing and strangely sarcastic smiles of my namesake himself. Satisfied with having produced in my bosom the intended effect, he seemed to chuckle in secret over the sting he had inflicted, and was characteristically disregardful of the public applause which the success of his witty endeavors might have so easily elicited. That the school, indeed, did not feel his design, perceive its accomplishment, and participate in his sneer, was, for many anxious months, a riddle I could not resolve. Perhaps the *gradation* of his copy rendered it not so readily perceptible; or, more possibly, I owed my security to the masterly

air of the copyist, who, disdaining the letter, (which in a painting is all the obtuse can see,) gave but the full spirit of his original for my individual contemplation and chagrin.

I have already more than once spoken of the disgusting air of patronage which he assumed toward me, and of his frequent officious interference with my will. This interference often took the ungracious character of advice; advice not openly given, but hinted or insinuated. I received it with a repugnance which gained strength as I grew in years. Yet, at this distant day, let me do him the simple justice to acknowledge that I can recall no occasion when the suggestions of my rival were on the side of those errors or follies so usual to his immature age and seeming inexperience; that his moral sense, at least, if not his general talents and worldly wisdom, was far keener than my own; and that I might, today, have been a better, and thus a happier man, had I less frequently rejected the counsels embodied in those meaning whispers which I then but too cordially hated and too bitterly despised.

As it was, I at length grew restive in the extreme under his distasteful supervision, and daily resented more and more openly what I considered his intolerable arrogance. I have said that, in the first years of our connexion as schoolmates, my feelings in regard to him might have been easily ripened into friendship; but, in the latter months of my residence at the academy, although the intrusion of his ordinary manner had, beyond doubt, in some measure abated, my sentiments, in nearly similar proportion, partook very much of positive hatred. Upon one occasion he saw this, I think, and afterwards avoided, or made a show of avoiding me.

It was about the same period, if I remember

aright, that, in an altercation of violence with him, in which he was more than usually thrown off his guard, and spoke and acted with an openness of demeanor rather foreign to his nature, I discovered, or fancied I discovered, in his accent, his air, and general appearance, a something which first startled, and then deeply interested me, by bringing to mind dim visions of my earliest infancy—wild, confused and thronging memories of a time when memory herself was yet unborn. I cannot better describe the sensation which oppressed me, than by saying that I could with difficulty shake off the belief of my having been acquainted with the being who stood before me, at some epoch very long ago—some point of the past even infinitely remote. The delusion, however, faded rapidly as it came; and I mention it at all but to define the day of the last conversation I there held with my singular namesake.

The huge old house, with its countless subdivisions, had several large chambers communicating with each other, where slept the greater number of the students. There were, however, (as must necessarily happen in a building so awkwardly planned,) many little nooks or recesses, the odds and ends of the structure; and these the economic ingenuity of Dr. Bransby had also fitted up as dormitories; although, being the merest closets, they were capable of accommodating but a single individual. One of these small apartments was occupied by Wilson.

One night, about the close of my fifth year at the school, and immediately after the altercation just mentioned, finding every one wrapped in sleep, I arose from bed, and, lamp in hand, stole through a wilderness of narrow passages from my own bedroom to that of my rival. I had long been plotting one of

those ill-natured pieces of practical wit at his expense in which I had hitherto been so uniformly unsuccessful. It was my intention, now, to put my scheme in operation, and I resolved to make him feel the whole extent of the malice with which I was imbued. Having reached his closet, I noiselessly entered, leaving the lamp, with a shade over it, on the outside. I advanced a step, and listened to the sound of his tranquil breathing. Assured of his being asleep, I returned, took the light, and with it again approached the bed. Close curtains were around it, which, in the prosecution of my plan, I slowly and quietly withdrew, when the bright rays fell vividly upon the sleeper, and my eyes, at the same moment, upon his countenance. I looked;—and a numbness, an iciness of feeling instantly pervaded my frame. My breast heaved, my knees tottered, my whole spirit became possessed with an objectless yet intolerable horror. Gasping for breath, I lowered the lamp in still nearer proximity to the face. Were these,—*these* the lineaments of William Wilson? I saw indeed, that they were his, but I shook as if with a fit of the ague, in fancying they were not. What *was* there about them to confound me in this manner? I gazed;—while my brain reeled with a multitude of incoherent thoughts. Not thus he appeared—assuredly not *thus*—in the vivacity of his waking hours. The same name! the same contour of person! the same day of arrival at the academy! And then his dogged and meaningless imitation of my gait, my voice, my habits, and my manner! Was it, in truth, within the bounds of human possibility, that *what I now saw* was the result, merely, of the habitual practice of this sarcastic imitation? Awe-stricken, and with a creeping shudder, I extinguished the lamp, passed silently from the chamber, and

left, at once, the halls of that old academy, never to enter them again.

After a lapse of some months, spent at home in mere idleness, I found myself a student at Eton. The brief interval had been sufficient to enfeeble my remembrance of the events at Dr. Bransby's, or at least to effect a material change in the nature of the feelings with which I remembered them. The truth—the tragedy—of the drama was no more. I could now find room to doubt the evidence of my senses; and seldom called up the subject at all but with wonder at the extent of human credulity, and a smile at the vivid force of the imagination which I hereditarily possessed. Neither was this species of skepticism likely to be diminished by the character of the life I led at Eton. The vortex of thoughtless folly into which I there so immediately and so recklessly plunged, washed away all but the froth of my past hours, ingulfed at once every solid or serious impression, and left to memory only the veriest levities of a former existence.

I do not wish, however, to trace the course of my miserable profligacy here—a profligacy which set at defiance the laws, while it eluded the vigilance of the institution. Three years of folly, passed without profit, had but given me rooted habits of vice, and added, in a somewhat unusual degree, to my bodily stature, when, after a week of soulless dissipation, I invited a small party of the most dissolute students to a secret carousal in my chambers. We met at a late hour of the night; for our debaucheries were to be faithfully protracted until morning. The wine flowed freely, and there were not wanting other and perhaps more dangerous seductions; so that the gray dawn had already faintly appeared in the east, while our delirious extravagance was at its height.

Madly flushed with cards and intoxication, I was in the act of insisting upon a toast of more than wonted profanity, when my attention was suddenly diverted by the violent, although partial unclosing of the door of the apartment, and by the eager voice of a servant from without. He said that some person, apparently in great haste, demanded to speak with me in the hall.

Wildly excited with wine, the unexpected interruption rather delighted than surprised me. I staggered forward at once, and a few steps brought me to the vestibule of the building. In this low and small room there hung no lamp; and now no light at all was admitted, save that of the exceedingly feeble dawn which made its way through the semicircular window. As I put my foot over the threshold I became aware of the figure of a youth about my own height, and habited in a white kerseymere morning frock, cut in the novel fashion of the one I myself wore at the moment. This the faint light enabled me to perceive; but the features of his face I could not distinguish. Upon my entering, he strode hurriedly up to me, and seizing me by the arm with a gesture of petulant impatience, whispered the words "William Wilson!" in my ear.

I grew perfectly sober in an instant.

There was that in the manner of the stranger, and in the tremulous shake of his uplifted finger, as he held it between my eyes and the light, which filled me with unqualified amazement; but it was not this which had so violently moved me. It was the pregnancy of solemn admonition in the singular, low, hissing utterance; and, above all, it was the character, the tone, *the key*, of those few, simple, and familiar, yet *whispered* syllables, which came with a thousand thronging memories of by-gone days,

and struck upon my soul with the shock of a galvanic battery. Ere I could recover the use of my senses he was gone.

Although this event failed not of a vivid effect upon my disordered imagination, yet was it evanescent as vivid. For some weeks, indeed, I busied myself in earnest inquiry, or was wrapped in a cloud of morbid speculation. I did not pretend to disguise from my perception the identity of the singular individual who thus perseveringly interfered with my affairs, and harassed me with his insinuated counsel. But who and what was this Wilson?—and whence came he?—and what were his purposes? Upon neither of these points could I be satisfied—merely ascertaining, in regard to him, that a sudden accident in his family had caused his removal from Dr. Bransby's academy on the afternoon of the day in which I myself had eloped. But in a brief period I ceased to think upon the subject, my attention being all absorbed in a contemplated departure for Oxford. Thither I soon went, the uncalculating vanity of my parents furnishing me with an outfit and annual establishment, which would enable me to indulge at will in the luxury already so dear to my heart—to vie in profuseness of expenditure with the haughtiest heirs of the wealthiest earldoms in Great Britain.

Excited by such appliances to vice, my constitutional temperament broke forth with redoubled ardor, and I spurned even the common restraints of decency in the mad infatuation of my revels. But it were absurd to pause in the detail of my extravagance. Let it suffice, that among spendthrifts I out-Heroded Herod, and that, giving name to a multitude of novel follies, I added no brief appendix to the long

catalogue of vices then usual in the most dissolute university of Europe.

It could hardly be credited, however, that I had, even here, so utterly fallen from the gentlemanly estate, as to seek acquaintance with the vilest arts of the gambler by profession, and, having become an adept in his despicable science, to practise it habitually as a means of increasing my already enormous income at the expense of the weak-minded among my fellow-collegians. Such, nevertheless, was the fact. And the very enormity of this offense against all manly and honorable sentiment proved, beyond doubt, the main if not the sole reason of the impunity with which it was committed. Who, indeed, among my most abandoned associates, would not rather have disputed the clearest evidence of his senses, than have suspected of such courses, the gay, the frank, the generous William Wilson—the noblest and most liberal commoner at Oxford—him whose follies (said his parasites) were but the follies of youth and unbridled fancy—whose errors but inimitable whim—whose darkest vice but a careless and dashing extravagance?

I had been now two years successfully busied in this way, when there came to the university a young *parvenu* nobleman, Glendinning—rich, said report, as Herodes Atticus—his riches, too, as easily acquired. I soon found him of weak intellect, and, of course, marked him as a fitting subject for my skill. I frequently engaged him in play, and contrived, with the gambler's usual art, to let him win considerable sums, the more effectually to entangle him in my snares. At length, my schemes being ripe, I met him (with the full intention that this meeting should be final and decisive) at the chambers of a fellow-commoner, (Mr. Preston,) equally intimate with

both, but who, to do him justice, entertained not even a remote suspicion of my design. To give to this a better coloring, I had contrived to have assembled a party of some eight or ten, and was solicitously careful that the introduction of cards should appear accidental, and originate in the proposal of my contemplated dupe himself. To be brief upon a vile topic, none of the low finesse was omitted, so customary upon similar occasions, that it is a just matter for wonder how any are still found so besotted as to fall its victim.

We had protracted our sitting far into the night, and I had at length effected the manœuvre of getting Glendinning as my sole antagonist. The game, too, was my favorite *ecarte*. The rest of the company interested in the extent of our play, had abandoned their own cards, and were standing around us as spectators. The *parvenu*, who had been induced by my artifices in the early part of the evening, to drink deeply, now shuffled, dealt, or played, with a wild nervousness of manner for which his intoxication, I thought, might partially, but could not altogether account. In a very short period he had become my debtor to a large amount, when, having taken a long draught of port, he did precisely what I had been coolly anticipating—he proposed to double our already extravagant stakes. With a well-feigned show of reluctance, and not until after my repeated refusal had seduced him into some angry words which gave a color of *pique* to my compliance, did I finally comply. The result, of course, did but prove how entirely the prey was in my toils: in less than an hour he had quadrupled his debt. For some time his countenance had been losing the florid tinge lent it by the wine; but now, to my astonishment, I perceived that it had grown to a

pallor truly fearful. I say, to my astonishment. Glendinning had been represented to my eager inquiries as immeasurably wealthy; and the sums which he had as yet lost, although in themselves vast, could not, I supposed, very seriously annoy, much less so violently affect him. That he was overcome by the wine just swallowed, was the idea which most readily presented itself; and, rather with a view to the preservation of my own character in the eyes of my associates, than from any less interested motive, I was about to insist, peremptorily, upon a discontinuance of the play, when some expressions at my elbow from among the company, and an ejaculation evincing utter despair on the part of Glendinning, gave me to understand that I had effected his total ruin under circumstances which, rendering him an object for the pity of all, should have protected him from the ill offices even of a fiend.

What now might have been my conduct it is difficult to say. The pitiable condition of my dupe had thrown an air of embarrassed gloom over all; and, for some moments, a profound silence was maintained, during which I could not help feeling my cheeks tingle with the many burning glances of scorn or reproach cast upon me by the less abandoned of the party. I will even own that an intolerable weight of anxiety was for a brief instant lifted from my bosom by the sudden and extraordinary interruption which ensued. The wide, heavy folding doors of the apartment were all at once thrown open, to their full extent, with a vigorous and rushing impetuosity that extinguished, as if by magic, every candle in the room. Their light in dying, enabled us just to perceive that a stranger had entered, about my own height, and closely muffled in a cloak. The darkness, however, was now total; and we could

only *feel* that he was standing in our midst. Before any one of us could recover from the extreme astonishment into which this rudeness had thrown all, we heard the voice of the intruder.

"Gentlemen," he said, in a low, distinct, and never-to-be-forgotten *whisper* which thrilled to the very marrow of my bones, "Gentlemen, I make no apology for this behavior, because in thus behaving, I am but fulfilling a duty. You are, beyond doubt, uninformed of the true character of the person who has tonight won at *ecarte* a large sum of money from Lord Glendinning. I will therefore put you upon an expeditious and decisive plan of obtaining this very necessary information. Please to examine, at your leisure, the inner linings of the cuff of his left sleeve, and the several little packages which may be found in the somewhat capacious pockets of his embroidered morning wrapper."

While he spoke, so profound was the stillness that one might have heard a pin drop upon the floor. In ceasing, he departed at once, and as abruptly as he had entered. Can I—shall I describe my sensations? Must I say that I felt all the horrors of the damned? Most assuredly I had little time for reflection. Many hands roughly seized me upon the spot, and lights were immediately re-procured. A search ensued. In the lining of my sleeve were found all the court cards essential in *ecarte*, and, in the pockets of my wrapper, a number of packs, fac-similes of those used at our sittings, with the single exception that mine were of the species called, technically, *arrondees;* the honors being slightly convex at the ends, the lower cards slightly convex at the sides. In this disposition, the dupe who cuts, as customary, at the length of the pack.

will invariably find that he cuts his antagonist an honor; while the gambler, cutting at the breadth, will, as certainly, cut nothing for his victim which may count in the records of the game.

Any burst of indignation upon this discovery would have affected me less than the silent contempt, or the sarcastic composure, with which it was received.

"Mr. Wilson," said our host, stooping to remove from beneath his feet an exceedingly luxurious cloak of rare furs, "Mr. Wilson, this is your property." (The weather was cold; and, upon quitting my own room, I had thrown a cloak over my dressing wrapper, putting it off upon reaching the scene of play.) "I presume it is supererogatory to seek here (eyeing the folds of the garment with a bitter smile) for any farther evidence of your skill. Indeed, we have had enough. You will see the necessity, I hope, of quitting Oxford—at all events, of quitting instantly my chambers."

Abased, humbled to the dust as I then was, it is probable that I should have resented this galling language by immediate personal violence, had not my whole attention been at the moment arrested by a fact of the most startling character. The cloak which I had worn was of a rare description of fur; how rare, how extravagantly costly, I shall not venture to say. Its fashion, too, was of my own fantastic invention; for I was fastidious to an absurd degree of coxcombry, in matters of this frivolous nature. When, therefore, Mr. Preston reached me that which he had picked up upon the floor, and near the folding-doors of the apartment, it was with an astonishment nearly bordering upon terror, that I perceived my own already hanging on my arm, (where I had no doubt unwittingly placed it,) and that the one presented me was but its exact coun-

terpart in every, in even the minutest possible particular. The singular being who had so disastrously exposed me, had been muffled, I remembered, in a cloak; and none had been worn at all by any of the members of our party, with the exception of myself. Retaining some presence of mind, I took the one offered me by Preston; placed it, unnoticed, over my own; left the apartment with a resolute scowl of defiance; and, next morning ere dawn of day, commenced a hurried journey from Oxford to the continent, in a perfect agony of horror and of shame.

I fled in vain. My evil destiny pursued me as if in exultation, and proved, indeed, that the exercise of its mysterious dominion had as yet only begun. Scarcely had I set foot in Paris, ere I had fresh evidence of the detestable interest taken by this Wilson in my concerns. Years flew, while I experienced no relief. Villain!—at Rome, with how untimely, yet with how spectral an officiousness, stepped he in between me and my ambition! At Vienna, too—at Berlin—and at Moscow! Where in truth, had I *not* bitter cause to curse him within my heart? From his inscrutable tyranny did I at length flee, panic-striken, as from a pestilence; and to the very ends of the earth *I fled in vain.*

And again, and again, in secret communion with my own spirit, would I demand the questions "Who is he?—whence came he?—and what are his objects?" But no answer was there found. And now I scrutinized, with a minute scrutiny, the forms, and the methods, and the leading traits of his impertinent supervision. But even here there was very little upon which to base a conjecture. It was noticeable, indeed, that, in no one of the multiplied instances in which he had of late crossed my path, had he so

crossed it except to frustrate those schemes, or to disturb those actions, which, if fully carried out, might have resulted in bitter mischief. Poor justification this, in truth, for an authority so imperiously assumed! Poor indemnity for natural rights of self-agency so pertinaciously, so insultingly denied!

I had also been forced to notice that my tormentor, for a very long period of time, (while scrupulously and with miraculous dexterity maintaining his whim of an identity of apparel with myself,) had so contrived it, in the execution of his varied interference with my will, that I saw not, at any moment the features of his face. Be Wilson what he might, *this*, at least, was but the veriest of affectation, or of folly. Could he, for an instant, have supposed that, in my admonisher at Eton—in the destroyer of my honor at Oxford,—in him who thwarted my ambition at Rome, my revenge at Paris, my passionate love at Naples, or what he falsely termed my avarice in Egypt,—that in this, my arch-enemy and evil genius, I could fail to recognise the William Wilson of my school-boy days,—the namesake, the companion, the rival,—the hated and dreaded rival at Dr. Bransby's? Impossible!—But let me hasten to the last eventful scene of the drama.

Thus far I had succumbed supinely to this imperious domination. The sentiment of deep awe with which I habitually regarded the elevated character, the majestic wisdom, the apparent omnipresence and omnipotence of Wilson, added to a feeling of even terror, with which certain other traits in his nature and assumptions inspired me, had operated, hitherto, to impress me with an idea of my own utter weakness and helplessness, and to suggest an implicit, although bitterly reluctant

submission to his arbitrary will. But, of late days, I had given myself up entirely to wine; and its maddening influence upon my hereditary temper rendered me more and more impatient of control, I began to murmur,—to hesitate,—to resist. And was it only fancy which induced me to believe that, with the increase of my own firmness, that of my tormentor underwent a proportional diminution? Be this as it may, I now began to feel the inspiration of a burning hope, and at length nurtured in my secret thoughts a stern and desperate resolution that I would submit no longer to be enslaved.

It was at Rome, during the Carnival of 18—, that I attended a masquerade in the palazzo of the Neapolitan Duke Di Broglio. I had indulged more freely than usual in the excesses of the wine-table; and now the suffocating atmosphere of the crowded rooms irritated me beyond endurance. The difficulty, too, of forcing my way through the mazes of the company contributed not a little to the ruffling of my temper; for I was anxiously seeking (let me not say with what unworthy motive) the young, the gay, the beautiful wife of the aged and doting Di Broglio. With a too unscrupulous confidence she had previously communicated to me the secret of the costume in which she would be habited, and now, having caught a glimpse of her person, I was hurrying to make my way into her presence. At this moment I felt a light hand placed upon my shoulder, and that ever-remembered, low, damnable *whisper* within my ear.

In an absolute frenzy of wrath, I turned at once upon him who had thus interrupted me, and seized him violently by the collar. He was attired, as I had expected, in a costume altogether similar to my own; wearing a Spanish cloak of blue velvet,

begirt about the waist with a crimson belt sustaining a rapier. A mask of black silk entirely covered his face.

"Scoundrel!" I said, in a voice husky with rage, while every syllable I uttered seemed as new fuel to my fury; "scoundrel! impostor! accursed villain! you shall not—you *shall not* dog me unto death! Follow me, or I stab you where you stand!"—and I broke my way from the ball-room into a small antechamber adjoining, dragging him unresistingly with me as I went.

Upon entering, I thrust him furiously from me. He staggered against the wall, while I closed the door with an oath, and commanded him to draw. He hesitated but for an instant; then, with a slight sigh, drew in silence, and put himself upon his defence.

The contest was brief indeed. I was frantic with every species of wild excitement, and felt within my single arm the energy and power of a multitude. In a few seconds I forced him by sheer strength against the wainscoting, and thus, getting him at mercy, plunged my sword, with brute ferocity, repeatedly through and through his bosom.

At that instant some person tried the latch of the door. I hastened to prevent an intrusion, and then immediately returned to my dying antagonist. But what human language can adequately portray *that* astonishment, *that* horror which possessed me at the spectacle then presented to view? The brief moment in which I averted my eyes had been sufficient to produce, apparently, a material change in the arrangements at the upper or farther end of the room. A large mirror,—so at first it seemed to me in my confusion—now stood where none had been perceptible before; and, as I stepped up to it in ex-

tremity of terror, mine own image, but with features all pale and dabbled in blood, advanced to meet me with a feeble and tottering gait.

Thus it appeared, I say, but was not. It was my antagonist—it was Wilson, who then stood before me in the agonies of his dissolution. His mask and cloak lay, where he had thrown them, upon the floor. Not a thread in all his raiment—not a line in all the marked and singular lineaments of his face which was not, even in the most absolute identity, *mine own*.

It was Wilson; but he spoke no longer in a whisper, and I could have fancied that I myself was speaking while he said:

"*You have conquered, and I yield. Yet henceforward art thou also dead—dead to the World, to Heaven and to Hope! In me didst thou exist—and, in my death, see by this image, which is thine own, how utterly thou hast murdered thyself.*"

VON KEMPELEN AND HIS DISCOVERY

AFTER the very minute and elaborate paper by Arago, to say nothing of the summary in "Silliman's Journal," with the detailed statement just published by Lieutenant Maury, it will not be supposed, of course, that in offering a few hurried remarks in reference to Von Kempelen's discovery, I have any design to look at the subject in a *scientific* point of view. My object is simply, in the first place, to say a few words of Von Kempelen himself (with whom, some years ago, I had the honor of a slight personal acquaintance,) since every thing which concerns him must necessarily, at this moment, be of interest; and, in the second place, to look in a general way, and speculatively, at the *results* of the discovery.

It may be as well, however, to premise the cursory observations which I have to offer, by denying, very decidedly, what seems to be a general impression (gleaned, as usual in a case of this kind, from the newspapers,) viz.: that this discovery, astounding as it unquestionably is, is *unanticipated*.

By reference to the "Diary of Sir Humphrey Davy," (Cottle and Munroe, London, pp. 150,) it will be seen at pp. 53 and 82, that this illustrious chemist had not only conceived the idea now in question, but had actually made *no inconsiderable progress, experimentally*, in the very *identical analysis* now so triumphantly brought to an issue by Von Kempelen, who although he makes not the slightest allusion to it, is, *without doubt* (I say it unhesitat-

ingly, and can prove it, if required,) indebted to the "Diary" for at least the first hint of his own undertaking. Although a little technical, I cannot refrain from appending two passages from the "Diary," with one of Sir Humphrey's equations. [As we have not the algebraic signs necessary, and as the "Diary" is to be found at the Athenæum Library, we omit here a small portion of Mr. Poe's manuscript.—Ed.]

The paragraph from the "Courier and Enquirer," which is now going the rounds of the press, and which purports to claim the invention for a Mr. Kissam, of Brunswick, Maine, appears to me, I confess, a little apocryphal, for several reasons; although there is nothing either impossible or very improbable in the statement made. I need not go into details. My opinion of the paragraph is founded principally upon its *manner*. It does not *look* true. Persons who are narrating *facts*, are seldom so particular as Mr. Kissam seems to be, about day and date and precise location. Besides, if Mr. Kissam actually *did* come upon the discovery he says he did, at the period designated—nearly eight years ago—how happens it that he took no steps, *on the instant*, to reap the immense benefits which the merest bumpkin must have known would have resulted to him individually, if not to the world at large, from the discovery? It seems to me quite incredible that any man, of common understanding, could have discovered what Mr. Kissam says he did, and yet have subsequently acted so like a baby—so like an owl—as Mr. Kissam *admits* that he did. By-the-way, who *is* Mr. Kissam? and is not the whole paragraph in the "Courier and Enquirer" a fabrication got up to "make a talk?" It must be confessed that it has

an amazingly moon-hoax-y air. Very little dependence is to be placed upon it, in my humble opinion; and if I were not well aware, from experience, how very easily men of science are *mystified*, on points out of their usual range of inquiry, I should be profoundly astonished at finding so eminent a chemist as Professor Draper, discussing Mr. Kissam's (or is it Mr. Quizzem's?) pretensions to this discovery, in so serious a tone.

But to return to the "Diary" of Sir Humphrey Davy. This pamphlet was *not* designed for the public eye, even upon the decease of the writer, as any person at all conversant with authorship may satisfy himself at once by the slightest inspection of the style. At page 13, for example, near the middle, we read, in reference to his researches about the protoxide of azote: "In less than half a minute the respiration being continued, diminished gradually and *were* succeeded by analogous to gentle pressure on all the muscles." That the *respiration* was not "diminished," is not only clear by the subsequent context, but by the use of the plural, "were." The sentence, no doubt, was thus intended: "In less than half a minute, the respiration [being continued, these feelings] diminished gradually, and were succeeded by [a sensation] analogous to gentle pressure on all the muscles." A hundred similar instances go to show that the MS. so inconsiderately published, was merely a *rough note-book*, meant only for the writer's own eye; but an inspection of the pamphlet will convince almost any thinking person of the truth of my suggestion. The fact is, Sir Humphrey Davy was about the last man in the world to *commit himself* on scientific topics. Not only had he a more than ordinary dislike to quackery, but he was morbidly afraid of *appearing*

empirical; so that, however fully he might have been convinced that he was on the right track in the matter now in question, he would never have spoken *out*, until he had every thing ready for the most practical demonstration. I verily believe that his last moments would have been rendered wretched, could he have suspected that his wishes in regard to burning this "Diary" (full of crude speculations) would have been unattended to; as, it seems, they were. I say "his wishes," for that he meant to include this note-book among the miscellaneous papers directed "to be burnt," I think there can be no manner of doubt. Whether it escaped the flames by good fortune or by bad, yet remains to be seen. That the passages quoted above, with the other similar ones referred to, gave Von Kempelen *the hint*, I do not in the slightest degree question; but I repeat, it yet remains to be seen whether this momentous discovery itself (*momentous* under any circumstances,) will be of service or disservice to mankind at large. That Von Kempelen and his immediate friends will reap a rich harvest, it would be folly to doubt for a moment. They will scarcely be so weak as not to "*realize*," in time, by large purchases of houses and land, with other property of *intrinsic* value.

In the brief account of Von Kempelen which appeared in the "Home Journal," and has since been extensively copied, several misapprehensions of the German original seem to have been made by the translator, who professes to have taken the passage from a late number of the Presburg "Schnellpost." "*Viele*" has evidently been misconceived (as it often is,) and what the translator renders by "sorrows," is probably "*lieden*," which, in its true version, "sufferings," would give a totally different

complexion to the whole account; but, of course, much of this is merely guess, on my part.

Von Kempelen, however, is by no means "a misanthrope," in appearance, at least, whatever he may be in fact. My acquaintance with him was casual altogether; and I am scarcely warranted in saying that I know him at all; but to have seen and conversed with a man of so *prodigious* a notoriety as he has attained, or *will* attain in a few days, is not a small matter, as times go.

"The Literary World" speaks of him, confidently, as a *native* of Presburg (misled, perhaps, by the account in the "Home Journal,") but I am pleased in being able to state *positively*, since I have it from his own lips, that he was born in Utica, in the State of New York, although both his parents, I believe, are of Presburg descent. The family is connected, in some way, with Mäelzer, of Automaton-chess-player memory. [If we are not mistaken, the name of the *inventor* of the chess-player was either Kempelen, Von Kempelen, or something like it.—Ed.] In person, he is short and stout, with large, *fat*, blue eyes, sandy hair and whiskers, a wide but pleasing mouth, fine teeth, and I think a Roman nose. There is some defect in one of his feet. His address is frank, and his whole manner noticeable for *bonhommie*. Altogether, he looks, speaks and acts as little like "a misanthrope" as any man I ever saw. We were fellow-sojourners for a week, about six years ago, at Earl's Hotel, in Providence, Rhode Island; and I presume that I conversed with him, at various times, for some three or four hours altogether. His principal topics were those of the day; and nothing that fell from him led me to suspect his scientific attainments. He left the hotel before me, intending to go to New York, and thence

to Bremen; it was in the latter city that his great discovery was first made public; or, rather, it was there that he was first suspected of having made it. This is about all that I personally know of the now immortal Von Kempelen; but I have thought that even these few details would have interest for the public.

There can be little question that most of the marvellous rumors afloat about this affair, are pure inventions, entitled to about as much credit as the story of Aladdin's lamp; and yet, in a case of this kind, as in the case of the discoveries in California, it is clear that the truth *may be* stranger than fiction. The following anecdote, at least, is so well authenticated, that we may receive it implicitly.

Von Kempelen had never been even tolerably well off during his residence at Bremen; and often, it was well known, he had been put to extreme shifts, in order to raise trifling sums. When the great excitement occurred about the forgery on the house of Gutsmuth & Co., suspicion was directed toward Von Kempelen, on account of his having purchased a considerable property in Gasperitch Lane, and his refusing, when questioned, to explain how he became possessed of the purchase money. He was at length arrested, but nothing decisive appearing against him, was in the end set at liberty. The police, however, kept a strict watch upon his movements, and thus discovered that he left home frequently, taking always the same road, and invariably giving his watchers the slip in the neighborhood of that labyrinth of narrow and crooked passages known by the flash-name of the "Dondergat." Finally, by dint of great perseverence, they traced him to a garret in an old house of seven stories, in an alley called Flätplatz; and, coming upon him suddenly, found him, as they imagined, in the midst

of his counterfeiting operations. His agitation is represented as so excessive that the officers had not the slightest doubt of his guilt. After hand-cuffing him, they searched his room, or rather rooms; for it appears he occupied all the *mausarde*.

Opening into the garret where they caught him, was a closet, ten feet by eight, fitted up with some chemical apparatus, of which the object has not yet been ascertained. In one corner of the closet was a very small furnace, with a glowing fire in it, and on the fire a kind of duplicate crucible—two crucibles connected by a tube. One of these crucibles was nearly full of *lead* in a state of fusion, but not reaching up to the aperture of the tube, which was close to the brim. The other crucible had some liquid in it, which, as the officers entered, seemed to be furiously dissipating in vapor. They relate that, on finding himself taken, Von Kempelen seized the crucibles with both hands (which were encased in gloves that afterwards turned out to be asbestic), and threw the contents on the tiled floor. It was now that they hand-cuffed him; and, before proceeding to ransack the premises, they searched his person, but nothing unusual was found about him, excepting a paper parcel, in his coat pocket, containing what was afterwards ascertained to be a mixture of antimony and some *unknown substance*, in nearly, but not quite, equal proportions. All attempts at analyzing the unknown substance have, so far, failed, but that it will ultimately be analyzed, is not to be doubted.

Passing out of the closet with their prisoner, the officers went through a sort of ante-chamber, in which nothing material was found, to the chemist's sleeping-room. They here rummaged some drawers and boxes, but discovered only a few papers, of no

importance, and some good coin, silver and gold. At length, looking under the bed, they saw *a large, common hair trunk, without hinges, hasp, or lock,* and with the top lying carelessly *across* the bottom portion. Upon attempting to draw this trunk out from under the bed, they found that, with their united strength (there were three of them, all powerful men), they "could not stir it one inch." Much astonished at this, one of them crawled under the bed, and looking into the trunk, said:

"No wonder we couldn't move it—why, it's full to the brim of old bits of brass!"

Putting his feet, now, against the wall, so as to get a good purchase, and pushing with all his force, while his companions pulled with all theirs, the trunk, with much difficulty, was slid out from under the bed, and its contents examined. The supposed brass with which it was filled was all in small, smooth pieces, varying from the size of a pea to that of a dollar; but the pieces were irregular in shape, although all more or less flat—looking, upon the whole, "very much as lead looks when thrown upon the ground in a molten state, and there suffered to grow cool." Now, not one of these officers for a moment suspected this metal to be anything *but* brass. The idea of its being *gold* never entered their brains, of course; how *could* such a wild fancy have entered it? And their astonishment may be well conceived, when next day it became known, all over Bremen, that the "lot of brass" which they had carted so contemptuously to the police office, without putting themselves to the trouble of pocketing the smallest scrap, was not only gold—real gold—but gold far finer than any employed in coinage—gold, in fact, absolutely pure, virgin, without the slightest appreciable alloy!

I need not go over the details of Von Kempelen's confession (as far as it went) and release, for these are familiar to the public. That he has actually realized, in spirit and in effect, if not to the letter, the old chimera of the philosopher's stone, no sane person is at liberty to doubt. The opinions of Arago are, of course, entitled to the greatest consideration; but he is by no means infallible; and what he says of *bismuth*, in his report to the academy, must be taken *cum grano salis*. The simple truth is, that up to this period, *all* analysis has failed; and until Von Kempelen chooses to let us have the key to his own published enigma, it is more than probable that the matter will remain, for years, *in statu quo*. All that yet can fairly be said to be known, is, that "*pure gold can be made at will, and very readily, from lead, in connection with certain other substances, in kind and in proportions, unknown.*"

Speculation, of course, is busy as to the immediate and ultimate results of this discovery—a discovery which few thinking persons will hesitate in referring to an increased interest in the matter of gold generally, by the late developments in California; and this reflection brings us inevitably to another—the exceeding *inopportuneness* of Von Kempelen's analysis. If many were prevented from adventuring to California, by the mere apprehension that gold would so materially diminish in value, on account of its plentifulness in the mines there, as to render the speculation of going so far in search of it a doubtful one—what impression will be wrought *now*, upon the minds of those about to emigrate, and especially upon the minds of those actually in the mineral region, by the announcement of this astounding discovery of Von Kempelen?

a discovery which declares, in so many words, that beyond its intrinsic worth for manufacturing purposes, (whatever that worth may be), gold now is, or at least soon will be (for it cannot be supposed that Von Kempelen can *long* retain his secret) of no greater *value* than lead, and of far inferior value to silver. It is indeed, exceedingly difficult to speculate prospectively upon the consequences of the discovery; but one thing may be positively maintained—that the announcement of the discovery six months ago, would have had material influence in regard to the settlement of California.

In Europe, as yet, the most noticeable results have been a rise of two hundred per cent. in the price of lead, and nearly twenty-five per cent. in that of silver.

THE FACTS IN THE CASE OF M. VALDEMAR

OF course I shall not pretend to consider it any matter for wonder, that the extraordinary case of M. Valdemar has excited discussion. It would have been a miracle had it not—especially under the circumstances. Through the desire of all parties concerned, to keep the affair from the public, at least for the present, or until we had farther opportunities for investigation—through our endeavors to effect this—a garbled or exaggerated account made its way into society, and became the source of many unpleasant misrepresentations; and, very naturally, of a great deal of disbelief.

It is now rendered necessary that I give the *facts*—as far as I comprehend them myself. They are, succinctly, these:

My attention, for the last three years, had been repeatedly drawn to the subject of Mesmerism; and, about nine months ago, it occurred to me, quite suddenly, that in the series of experiments made hitherto, there had been a very remarkable and most unaccountable omission:—no person had as yet been mesmerized *in articulo mortis*. It remained to be seen, first, whether, in such condition, there existed in the patient any susceptibility to the magnetic influence; secondly, whether, if any existed, it was impaired or increased by the condition; thirdly, to what extent, or for how long a period,

the encroachments of Death might be arrested by the process. There were other points to be ascertained, but these most excited my curiosity—the last in especial, from the immensely important character of its consequences.

In looking around me for some subject by whose means I might test these particulars, I was brought to think of my friend, M. Ernest Valdemar, the well-known compiler of the "Bibliotheca Forensica," and author (under the *nom de plume* of Issachar Marx) of the Polish versions of "Wallenstein" and "Gargantua." M. Valdemar, who has resided principally at Harlem, N. Y., since the year 1839, is (or was) particularly noticeable for the extreme spareness of his person—his lower limbs much resembling those of John Randolph; and, also, for the whiteness of his whiskers, in violent contrast to the blackness of his hair—the latter, in consequence, being very generally mistaken for a wig. His temperament was markedly nervous, and rendered him a good subject for mesmeric experiment. On two or three occasions I had put him to sleep with little difficulty, but was disappointed in other results which his peculiar constitution had naturally led me to anticipate. His will was at no period positively, or thoroughly, under my control, and in regard to *clairvoyance*, I could accomplish with him nothing to be relied upon. I always attributed my failure at these points to the disordered state of his health. For some months previous to my becoming acquainted with him, his physicians had declared him in a confirmed phthisis. It was his custom, indeed, to speak calmly of his approaching dissolution, as of a matter neither to be avoided nor regretted.

When the ideas to which I have alluded first

occurred to me, it was of course very natural that I should think of M. Valdemar. I knew the steady philosophy of the man too well to apprehend any scruples from *him;* and he had no relatives in America who would be likely to interfere. I spoke to him frankly upon the subject; and, to my surprise, his interest seemed vividly excited. I say to my surprise; for, although he had always yielded his person freely to my experiments, he had never before given me any tokens of sympathy with what I did. His disease was of that character which would admit of exact calculation in respect to the epoch of its termination in death; and it was finally arranged between us that he would send for me about twenty-four hours before the period announced by his physicians as that of his decease.

It is now rather more than seven months since I received, from M. Valdemar himself, the subjoined note:

"My dear P——,

"You may as well come *now.* D—— and F—— are agreed that I cannot hold out beyond to-morrow midnight; and I think they have hit the time very nearly.

"Valdemar."

I received this note within half an hour after it was written, and in fifteen minutes more I was in the dying man's chamber. I had not seen him for ten days, and was appalled by the fearful alteration which the brief interval had wrought in him. His face wore a leaden hue; the eyes were utterly lustreless; and the emaciation was so extreme, that the skin had been broken through by the cheek-bones. His expectoration was excessive. The pulse

was barely perceptible. He retained, nevertheless, in a very remarkable manner, both his mental power and a certain degree of physical strength. He spoke with distinctness—took some palliative medicines without aid—and, when I entered the room, was occupied in penciling memoranda in a pocket-book. He was propped up in the bed by pillows. Doctors D—— and F—— were in attendance.

After pressing Valdemar's hand, I took these gentlemen aside, and obtained from them a minute account of the patient's condition. The left lung had been for eighteen months in a semi-osseous or cartilaginous state, and was, of course, entirely useless for all purposes of vitality. The right, in its upper portion, was also partially, if not thoroughly, ossified, while the lower region was merely a mass of purulent tubercles, running one into another. Several extensive perforations existed; and, at one point, permanent adhesion to the ribs had taken place. These appearances in the right lobe were of comparatively recent date. The ossification had proceeded with very unusual rapidity; no sign of it had been discovered a month before, and the adhesion had only been observed during the three previous days. Independently of the phthisis, the patient was suspected of aneurysm of the aorta; but on this point the osseous symptoms rendered an exact diagnosis impossible. It was the opinion of both physicians that M. Valdemar would die about midnight on the morrow (Sunday.) It was then seven o'clock on Saturday evening.

On quitting the invalid's bed-side to hold conversation with myself, Doctors D—— and F—— had bidden him a final farewell. It had not been their intention to return; but, at my request, they

agreed to look in upon the patient about ten the next night.

When they had gone, I spoke freely with M. Valdemar on the subject of his approaching dissolution, as well as, more particularly, of the experiment proposed. He still professed himself quite willing and even anxious to have it made, and urged me to commence it at once. A male and a female nurse were in attendance; but I did not feel myself altogether at liberty to engage in a task of this character with no more reliable witnesses than these people, in case of sudden accident, might prove. I therefore postponed operations until about eight the next night, when the arrival of a medical student, with whom I had some acquaintance, (Mr. Theodore L——l,) relieved me from farther embarrassment. It had been my design, originally, to wait for the physicians; but I was induced to proceed, first, by the urgent entreaties of M. Valdemar, and secondly, by my conviction that I had not a moment to lose, as he was evidently sinking fast.

Mr. L——l was so kind as to accede to my desire that he would take notes of all that occurred; and it is from his memoranda that what I now have to relate is, for the most part, either condensed or copied *verbatim*.

It wanted about five minutes of eight when, taking the patient's hand, I begged him to state, as distinctly as he could, to Mr. L——l, whether he (M. Valdemar,) was entirely willing that I should make the experiment of mesmerizing him in his then condition.

He replied feebly, yet quite audibly, "Yes, I wish to be mesmerized"—adding immediately afterwards, "I fear you have deferred it too long."

While he spoke thus, I commenced the passes

which I had already found most effectual in subduing him. He was evidently influenced with the first lateral stroke of my hand across his forehead; but although I exerted all my powers, no farther perceptible effect was induced until some minutes after ten o'clock, when Doctors D—— and F—— called, according to appointment. I explained to them, in a few words, what I designed, and as they opposed no objection, saying that the patient was already in the death agony, I proceeded without hesitation—exchanging, however, the lateral passes for downward ones, and directing my gaze entirely into the right eye of the sufferer.

By this time his pulse was imperceptible and his breathing was stertorous, and at intervals of half a minute.

This condition was nearly unaltered for a quarter of an hour. At the expiration of this period, however, a natural although a very deep sigh escaped the bosom of the dying man, and the stertorous breathing ceased—that is to say, its stertorousness was no longer apparent; the intervals were undiminished. The patient's extremities were of an icy coldness.

At five minutes before eleven, I perceived unequivocal signs of the mesmeric influence. The glassy roll of the eye was changed for that expression of uneasy *inward* examination which is never seen except in cases of sleep-waking, and which it is quite impossible to mistake. With a few rapid lateral passes I made the lids quiver, as in incipient sleep, and with a few more I closed them altogether. I was not satisfied, however, with this, but continued the manipulations vigorously, and with the fullest exertion of the will, until I had completely stiffened the limbs of the slumberer, after placing

them in a seemingly easy position. The legs were at full length; the arms were nearly so, and reposed on the bed at a moderate distance from the loins. The head was very slightly elevated.

When I had accomplished this, it was fully midnight, and I requested the gentlemen present to examine M. Valdemar's condition. After a few experiments, they admitted him to be in an unusually perfect state of mesmeric trance. The curiosity of both the physicians was greatly excited. Dr. D—— resolved at once to remain with the patient all night, while Dr. F—— took leave with a promise to return at daybreak. Mr. L——l and the nurses remained.

We left M. Valdemar entirely undisturbed until about three o'clock in the morning, when I approached him and found him in precisely the same condition as when Dr. F—— went away—that is to say, he lay in the same position; the pulse was imperceptible; the breathing was gentle (scarcely noticeable, unless through the application of a mirror to the lips;) the eyes were closed naturally; and the limbs were as rigid and as cold as marble. Still, the general appearance was certainly not that of death.

As I approached M. Valdemar I made a kind of half effort to influence his right arm into pursuit of my own, as I passed the latter gently to and fro above his person. In such experiments with this patient, I had never perfectly succeeded before, and assuredly I had little thought of succeeding now; but to my astonishment, his arm very readily, although feebly, followed every direction I assigned it with mine. I determined to hazard a few words or conversation.

"M. Valdemar," I said, "are you asleep?" He

made no answer, but I perceived a tremor about the lips, and was thus induced to repeat the question, again and again. At its third repetition, his whole frame was agitated by a very slight shivering; the eyelids unclosed themselves so far as to display a white line of a ball; the lips moved sluggishly, and from between them, in a barely audible whisper, issued the words:

"Yes;—asleep now. Do not wake me!—let me die so!"

I here felt the limbs and found them as rigid as ever. The right arm, as before, obeyed the direction of my hand. I questioned the sleep-waker again:

"Do you still feel pain in the breast, M. Valdemar?"

The answer now was immediate, but even less audible than before:

"No pain—I am dying."

I did not think it advisable to disturb him farther just then, and nothing more was said or done until the arrival of Dr. F——, who came a little before sunrise, and expressed unbounded astonishment at finding the patient still alive. After feeling the pulse and applying a mirror to the lips, he requested me to speak to the sleep-waker again. I did so, saying:

"M. Valdemar, do you still sleep?"

As before, some minutes elapsed ere a reply was made; and during the interval the dying man seemed to be collecting his energies to speak. At my fourth repetition of the question, he said very faintly, almost inaudibly:

"Yes; still asleep—dying."

It was now the opinion, or rather the wish, of the physicians, that M. Valdemar should be suffered to remain undisturbed in his present apparently

tranquil condition, until death should supervene—and this, it was generally agreed, must now take place within a few minutes. I concluded, however, to speak to him once more, and merely repeated my previous question.

While I spoke, there came a marked change over the countenance of the sleep-waker. The eyes rolled themselves slowly open, the pupils disappearing upwardly; the skin generally assumed a cadaverous hue, resembling not so much parchment as white paper; and the circular hectic spots which, hitherto, had been strongly defined in the centre of each cheek, *went out* at once. I use this expression, because the suddenness of their departure put me in mind of nothing so much as the extinguishment of a candle by a puff of the breath. The upper lip, at the same time, writhed itself away from the teeth, which it had previously covered completely; while the lower jaw fell with an audible jerk, leaving the mouth widely extended, and disclosing in full view the swollen and blackened tongue. I presume that no member of the party then present had been unaccoustomed to death-bed horrors; but so hideous beyond conception was the appearance of M. Valdemar at this moment, that there was a general shrinking back from the region of the bed.

I now feel that I have reached a point of this narrative at which every reader will be startled into positive disbelief. It is my business, however, simply to proceed.

There was no longer the faintest sign of vitality in M. Valdemar; and concluding him to be dead, we were consigning him to the charge of the nurses, when a strong vibratory motion was observable in the tongue. This continued for perhaps a

minute. At the expiration of this period, there issued from the distended and motionless jaws a voice—such as it would be madness in me to attempt describing. There are, indeed, two or three epithets which might be considered as applicable to it in part; I might say, for example, that the sound was harsh, and broken and hollow; but the hideous whole is indescribable, for the simple reason that no similar sounds have ever jarred upon the ear of humanity. There were two particulars, nevertheless, which I thought then, and still think, might fairly be stated as characteristic of the intonation—as well adapted to convey some idea of its unearthly peculiarity. In the first place, the voice seemed to reach our ears—at least mine—from a vast distance, or from some deep cavern within the earth. In the second place, it impressed me (I fear, indeed, that it will be impossible to make myself comprehended) as gelatinous or glutinous matters impress the sense of touch.

I have spoken both of "sound" and of "voice." I mean to say that the sound was one of distinct—of even wonderfully, thrillingly distinct—syllabification. M. Valdemar *spoke*—obviously in reply to the question I had propounded to him a few minutes before. I had asked him, it will be remembered, if he still slept. He now said:

"Yes;—no;—I *have been* sleeping—and now—now—*I am dead.*"

No person present even affected to deny, or attempted to repress, the unutterable, shuddering horror which these few words, thus uttered, were so well calculated to convey. Mr. L——l (the student) swooned. The nurses immediately left the chamber, and could not be induced to return. My own impressions I would not pretend to render intelligible

to the reader. For nearly an hour, we busied ourselves, silently—without the utterance of a word—in endeavors to revive Mr. L——l. When he came to himself, we addressed ourselves again to an investigation of M. Valdemar's condition.

It remained in all respects as I have last described it, with the exception that the mirror no longer afforded evidence of respiration. An attempt to draw blood from the arm failed. I should mention, too, that this limb was no farther subject to my will. I endeavored in vain to make it follow the direction of my hand. The only real indication, indeed, of the mesmeric influence, was now found in the vibratory movement of the tongue, whenever I addressed M. Valdemar a question. He seemed to be making an effort to reply, but had no longer sufficient volition. To queries put to him by any other person than myself he seemed utterly insensible—although I endeavored to place each member of the company in mesmeric *rapport* with him. I believe that I have now related all that is necessary to an understanding of the sleep-waker's state at this epoch. Other nurses were procured; and at ten o'clock I left the house in company with the two physicians and Mr. L——l.

In the afternoon we all called again to see the patient. His condition remained precisely the same. We had now some discussion as to the propriety and feasibility of awakening him; but we had little difficulty in agreeing that no good purpose would be served by so doing. It was evident that, so far, death (or what is usually termed death) had been arrested by the mesmeric process. It seemed clear to us all that to awaken M. Valdemar would be merely to insure his instant, or at least his speedy dissolution.

From this period until the close of last week—*an interval of nearly seven months*—we continued to make daily calls at M. Valdemar's house, accompanied, now and then, by medical and other friends. All this time the sleep-waker remained *exactly* as I have last described him. The nurses' attentions were continual.

It was on Friday last that we finally resolved to make the experiment of awakening, or attempting to awaken him; and it is the (perhaps) unfortunate result of this latter experiment which has given rise to so much discussion in private circles—to so much of what I cannot help thinking unwarranted popular feeling.

For the purpose of relieving M. Valdemar from the mesmeric trance, I made use of the customary passes. These, for a time, were unsuccessful. The first indication of revival was afforded by a partial descent of the iris. It was observed, as especially remarkable, that this lowering of the pupil was accompanied by the profuse out-flowing of a yellowish ichor (from beneath the lids) of a pungent and highly offensive odor.

It was now suggested that I should attempt to influence the patient's arm, as heretofore. I made the attempt and failed. Dr. F—— then intimated a desire to have me put a question. I did so, as follows:

"M. Valdemar, can you explain to us what are your feelings or wishes now?"

There was an instant return of the hectic circles on the cheeks; the tongue quivered, or rather rolled violently in the mouth (although the jaws and lips remained rigid as before;) and at length the same hideous voice which I have already described, broke forth·

"For God's sake!—quick!—quick!—put me to sleep—or, quick!—waken me!—quick!—*I say to you that I am dead!*"

I was thoroughly unnerved, and for an instant remained undecided what to do. At first I made an endeavor to re-compose the patient; but, failing in this through total abeyance of the will, I retraced my steps and as earnestly struggled to awaken him. In this attempt I soon saw that I should be successful—or at least I soon fancied that my success would be complete—and I am sure that all in the room were prepared to see the patient awaken.

For what really occurred, however, it is quite impossible that any human being could have been prepared.

As I rapidly made the mesmeric passes, amid ejaculations of "dead! dead!" absolutely *bursting* from the tongue and not from the lips of the sufferer, his whole frame at once—within the space of a single minute, or even less, shrunk—crumbled—absolutely *rotted* away beneath my hands. Upon the bed, before that whole company, there lay a nearly liquid mass of loathsome—of detestable putrescence.

THE THOUSAND-AND-SECOND TALE OF SCHEHERAZADE

Truth is stranger than fiction.—*Old Saying*

HAVING had occasion, lately, in the course of some Oriental investigations, to consult the *Tellmenow Isitsöornot*, a work which (like the Zohar of Simeon Jochaides) is scarcely known at all, even in Europe, and which has never been quoted, to my knowledge, by any American—if we except, perhaps, the author of the "Curiosities of American Literature;"—having had occasion, I say, to turn over some pages of the first-mentioned very remarkable work, I was not a little astonished to discover that the literary world has hitherto been strangely in error respecting the fate of the vizier's daughter, Scheherazade, as that fate is depicted in the "Arabian Nights;" and that the *denouement* there given, if not altogether inaccurate, as far as it goes, is at least to blame in not having gone very much farther.

For full information on this interesting topic, I must refer the inquisitive reader to the "Isitsöornot" itself; but, in the mean time, I shall be pardoned for giving a summary of what I there discovered.

It will be remembered, that, in the usual version of the tales, a certain monarch, having good cause to be jealous of his queen, not only puts her to death, but makes a vow, by his beard and the prophet, to espouse each night the most beautiful maiden in his dominions, and the next morning to deliver her up to the executioner.

Having fulfilled this vow for many years to the letter, and with a religious punctuality and method that conferred great credit upon him as a man of devout feelings and excellent sense, he was interrupted one afternoon (no doubt at his prayers) by a visit from his grand vizier, to whose daughter, it appears, there had occurred an idea.

Her name was Scheherazade, and her idea was, that she would either redeem the land from the depopulating tax upon its beauty, or perish, after the approved fashion of all heroines, in the attempt.

Accordingly, and although we do not find it to be leap-year, (which makes the sacrifice more meritorious,) she deputes her father, the grand vizier, to make an offer to the king of her hand. This hand the king eagerly accepts—(he had intended to take it at all events, and had put off the matter from day to day, only through fear of the vizier,)—but, in accepting it now, he gives all parties very distinctly to understand, that, grand vizier or no grand vizier, he has not the slightest design of giving up one iota of his vow or of his privileges. When, therefore, the fair Scheherazade insisted upon marrying the king, and did actually marry him despite her father's excellent advice not to do anything of the kind—when she would and did marry him, I say, will I nill I, it was with her beautiful black eyes as thoroughly open as the nature of the case would allow.

It seems, however, that this politic damsel (who had been reading Machiavelli, beyond doubt,) had a very ingenious little plot in her mind. On the night of the wedding, she contrived, upon I forget what specious pretence, to have her sister occupy a couch sufficiently near that of the royal pair to admit of easy conversation from bed to bed; and,

a little before cock-crowing, she took care to awaken the good monarch, her husband, (who bore her none the worse will because he intended to wring her neck on the morrow,)—she managed to awaken him, I say, (although, on account of a capital conscience and an easy digestion, he slept well,) by the profound interest of a story (about a rat and a black cat, I think,) which she was narrating (all in an under-tone, of course,) to her sister. When the day broke, it so happened that this history was not altogether finished, and that Scheherazade, in the nature of things, could not finish it just then, since it was high time for her to get up and be bowstrung—a thing very little more pleasant than hanging, only a trifle more genteel!

The king's curiosity, however, prevailing, I am sorry to say, even over his sound religious principles, induced him for this once to postpone the fulfilment of his vow until next morning, for the purpose and with the hope of hearing that night how it fared in the end with the black cat (a black cat, I think it was) and the rat.

The night having arrived, however, the lady Scheherazade not only put the finishing stroke to the black cat and the rat, (the rat was blue,) but before she well knew what she was about, found herself deep in the intricacies of a narration, having reference (if I am not altogether mistaken) to a pink horse (with green wings) that went, in a violent manner, by clockwork, and was wound up with an indigo key. With this history the king was even more profoundly interested than with the other—and, as the day broke before its conclusion, (notwithstanding all the queen's endeavors to get through with it in time for the bowstringing,) there was again no resource but to postpone that ceremony as before,

for twenty-four hours. The next night there happened a similar accident with a similar result; and then the next—and then again the next; so that, in the end, the good monarch, having been unavoidably deprived of all opportunity to keep his vow during a period of no less than one thousand and one nights, either forgets it altogether by the expiration of this time, or gets himself absolved of it in the regular way, or, (what is more probable) breaks it outright, as well as the head of his father confessor. At all events, Scheherazade, who, being lineally descended from Eve, fell heir, perhaps, to the whole seven baskets of talk, which the latter lady, we all know, picked up under the trees in the garden of Eden; Scheherazade, I say, finally triumphed, and the tariff upon beauty was repealed.

Now, this conclusion (which is that of the story as we have it upon record) is, no doubt, excessively proper and pleasant—but, alas! like a great many pleasant things, is more pleasant than true; and I am indebted altogether to the "Isitsöornot" for the means of correcting the error. "*Le mieux*," says a French proverb, "*est l'ennemi du bien*," and, in mentioning that Scheherazade had inherited the seven baskets of talk, I should have added, that she put them out at compound interest until they amounted to seventy-seven.

"My dear sister," said she, on the thousand-and-second night, (I quote the language of the "Isitsöornot" at this point, *verbatim*,) "my dear sister," said she, "now that all this little difficulty about the bowstring has blown over, and that this odious tax is so happily repealed, I feel that I have been guilty of great indiscretion in withholding from you and the king (who, I am sorry to say, snores—a

thing no gentleman would do,) the full conclusion of the history of Sinbad the sailor. This person went through numerous other and more interesting adventures than those which I related; but the truth is, I felt sleepy on the particular night of their narration, and so was seduced into cutting them short—a grievous piece of misconduct, for which I only trust that Allah will forgive me. But even yet it is not too late to remedy my great neglect—and as soon as I have given the king a pinch or two in order to wake him up so far that he may stop making that horrible noise, I will forthwith entertain you (and him if he pleases) with the sequel of this very remarkable story."

Hereupon the sister of Scheherazade, as I have it from the "Isitöornot," expressed no very particular intensity of gratification; but the king having been sufficiently pinched, at length ceased snoring, and finally said "Hum!" and then "Hoo!" when the queen understanding these words (which are no doubt Arabic) to signify that he was all attention, and would do his best not to snore any more—the queen, I say, having arranged these matters to her satisfaction, re-entered thus, at once, into the history of Sinbad the sailor.

"'At length, in my old age,' (these are the words of Sinbad himself, as retailed by Scheherazade,)—'at length, in my old age, and after enjoying many years of tranquillity at home, I became once more possessed with a desire of visiting foreign countries; and one day, without acquainting any of my family with my design, I packed up some bundles of such merchandise as was most precious and least bulky, and, engaging a porter to carry them, went with him down to the sea-shore, to await the arrival of any chance vessel that might convey me out of the

kingdom into some reigon which I had not as yet explored.

"'Having deposited the packages upon the sands, we sat down beneath some trees, and looked out into the ocean in the hope of perceiving a ship, but during several hours we saw none whatever. At length I fancied that I could hear a singular buzzing or humming sound—and the porter, after listening awhile, declared that he also could distinguish it. Presently it grew louder, and then still louder, so that we could have no doubt that the object which caused it was approaching us. At length, on the edge of the horizon, we discovered a black speck, which rapidly increased in size until we made it out to be a vast monster, swimming with a great part of its body above the surface of the sea. It came towards us with inconceivable swiftness, throwing up huge waves of foam around its breast, and illuminating all that part of the sea through which it passed, with a long line of fire that extended far off into the distance.

"'As the thing drew near we saw it very distinctly. Its length was equal to that of three of the loftiest trees that grow, and it was as wide as the great hall of audience in your palace, O most sublime and munificent of the caliphs. Its body, which was unlike that of ordinary fishes, was as solid as a rock, and of a jetty blackness throughout all that portion of it which floated above the water, with the exception of a narrow blood-red streak that completely begirdled it. The belly, which floated beneath the surface, and of which we could get only a glimpse now and then as the monster rose and fell with the billows, was entirely covered with metallic scales, of a color like that of the moon in misty weather. The back was flat and nearly

white, and from it there extended upwards of six spines, about half the length of the whole body.

"'This horrible creature had no mouth that we could perceive; but, as if to make up for this deficiency, it was provided with at least four score of eyes, that protruded from their sockets like those of the green dragon-fly, and were arranged all around the body in two rows, one above the other, and parallel to the blood-red streak, which seemed to answer the purpose of an eyebrow. Two or three of these dreadful eyes were much larger than the others, and had the appearance of solid gold.

"'Although this beast approached us, as I have before said, with the greatest rapidity, it must have been moved altogether by necromancy—for it had neither fins like a fish nor web-feet like a duck, nor wings like the sea-shell which is blown along in the manner of a vessel; nor yet did it writhe itself forward as do the eels. Its head and its tail were shaped precisely alike, only not far from the latter, were two small holes that served for nostrils, and through which the monster puffed out its thick breath with prodigious violence, and with a shrieking, disagreeable noise.

"'Our terror at beholding this hideous thing was very great; but it was even surpassed by our astonishment, when, upon getting a nearer look, we perceived upon the creature's back a vast number of animals about the size and shape of men, and altogether much resembling them, except that they wore no garments (as men do,) being supplied (by nature, no doubt,) with an ugly, uncomfortable covering, a good deal like cloth, but fitting so tight to the skin, as to render the poor wretches laughably awkward, and put them apparently to severe pain. On the very tips of their heads were certain

square-looking boxes, which, at first sight, I thought might have been intended to answer as turbans, but I soon discovered that they were excessively heavy and solid, and I therefore concluded they were contrivances designed, by their great weight, to keep the heads of the animals steady and safe upon their shoulders. Around the necks of the creatures were fastened black collars, (badges of servitude, no doubt,) such as we keep on our dogs, only much wider and infinitely stiffer—so that it was quite impossible for these poor victims to move their heads in any direction without moving the body at the same time; and thus they were doomed to perpetual contemplation of their noses—a view puggish and snubby in a wonderful if not positively in an awful degree.

"'When the monster had nearly reached the shore where we stood, it suddenly pushed out one of its eyes to a great extent, and emitted from it a terrible flash of fire, accompanied by a dense cloud of smoke, and a noise that I can compare to nothing but thunder. As the smoke cleared away, we saw one of the odd man-animals standing near the head of the large beast with a trumpet in his hand, through which (putting it to his mouth) he presently addressed us in loud, harsh, and disagreeable accents, that, perhaps, we should have mistaken for language, had they not come altogether through the nose.

"'Being thus evidently spoken to, I was at a loss how to reply, as I could in no manner understand what was said; and in this difficulty I turned to the porter, who was near swooning through affright, and demanded of him his opinion as to what species of monster it was, what it wanted, and what kind of creatures those were that so swarmed

upon its back. To this the porter replied, as well as he could for trepidation, that he had once before heard of this sea-beast; that it was a cruel demon, with bowels of sulphur and blood of fire, created by evil genii as the means of inflicting misery upon mankind; that the things upon its back were vermin, such as sometimes infest cats and dogs, only a little larger and more savage; and that these vermin had their uses, however evil—for, through the torture they caused the beast by their nibblings and stingings, it was goaded into that degree of wrath which was requisite to make it roar and commit ill, and so fulfil the vengeful and malicious designs of the wicked genii.

"'This account determined me to take to my heels, and, without once even looking behind me, I ran at full speed up into the hills, while the porter ran equally fast, although nearly in an opposite direction, so that, by these means, he finally made his escape with my bundles, of which I have no doubt he took excellent care—although this is a point I cannot determine, as I do not remember that I ever beheld him again.

"'For myself, I was so hotly pursued by a swarm of the men-vermin (who had come to the shore in boats) that I was very soon overtaken, bound hand and foot, and conveyed to the beast, which immediately swam out again into the middle of the sea.

"'I now bitterly repented my folly in quitting a comfortable home to peril my life in such adventures as this; but regret being useless, I made the best of my condition, and exerted myself to secure the good-will of the man-animal that owned the trumpet, and who appeared to exercise authority over its fellows. I succeeded so well in this endeavor that, in a few days, the creature bestowed upon me

various tokens of its favor, and, in the end, even went to the trouble of teaching me the rudiments of what it was vain enough to denominate its language; so that, at length, I was enabled to converse with it readily, and came to make it comprehend the ardent desire I had of seeing the world.

"'*Washish squashish squeak, Sinbad, hey-diddle diddle, grunt unt grumble, hiss, fiss, whiss,*' said he to me, one day after dinner—but I beg a thousand pardons, I had forgotten that your majesty is not conversant with the dialect of the Cock-neighs, (so the man-animals were called; I presume because their language formed the connecting link between that of the horse and that of the rooster.) With your permission, I will translate. '*Washish squashish,*' and so forth:—that is to say, 'I am happy to find, my dear Sinbad, that you are really a very excellent fellow; we are now about doing a thing which is called circumnavigating the globe; and since you are so desirous of seeing the world, I will strain a point and give you a free passage upon the back of the beast.'"

When the Lady Scheherazade had proceeded thus far, relates the "Isitsöornot," the king turned over from his left side to his right, and said—

"It is, in fact, *very* surprising, my dear queen, that you omitted, hitherto, these latter adventures of Sinbad. Do you know I think them exceedingly entertaining and strange?"

The king having thus expressed himself, we are told, the fair Scheherazade resumed her history in the following words:—

"Sinbad went on in this manner, with his narrative—'I thanked the man-animal for its kindness, and soon found myself very much at home on the beast, which swam at a prodigious rate through the

ocean; although the surface of the latter is, in that part of the world, by no means flat, but round like a pomegranate, so that we went—so to say—either up hill or down hill all the time.'"

"That, I think, was very singular," interrupted the king.

"Nevertheless, it is quite true," replied Scheherazade.

"I have my doubts," rejoined the king; "but, pray, be so good as to go on with the story."

"I will," said the queen. 'The beast,' continued Sinbad, 'swam, as I have related, up hill and down hill, until, at length, we arrived at an island, many hundreds of miles in circumference, but which, nevertheless, had been built in the middle of the sea by a colony of little things like caterpillars.'"*

"Hum!" said the king.

"'Leaving this island,' said Sinbad—(for Scheherazade, it must be understood, took no notice of her husband's ill-mannered ejaculation)—'leaving this island, we came to another where the forests were of solid stone, and so hard that they shivered to pieces the finest-tempered axes with which we endeavored to cut them down.'"†

* The coralites.

† "One of the most remarkable natural curiosities in Texas is a petrified forest, near the head of Pasigno river. It consists of several hundred trees, in an erect position, all turned to stone. Some trees, now growing, are partly petrified. This is a startling fact for natural philosophers, and must cause them to modify the existing theory of petrifaction."—*Kennedy.*

This account, at first discredited, has since been corroborated by the discovery of a completely petrified forest, near the head waters of the Chayenne, or Chienne river, which has its source in the Black Hills of the rocky chain.

There is scarcely, perhaps, a spectacle on the surface of the globe more remarkable, either in a geological or picturesque point of view, than that presented by the petrified forest, near Cairo. The traveller, having passed the tombs of the caliphs, just beyond the gates of the city, proceeds to the southward, nearly at right angles to the road across the desert to Suez, and,

"Hum!" said the king, again; but Scheherazade, paying him no attention, continued in the language of Sinbad.

"'Passing beyond this last island, we reached a country where there was a cave that ran to the distance of thirty or forty miles within the bowels of the earth, and that contained a greater number of far more spacious and more magnificent palaces than are to be found in all Damascus and Bagdad. From the roofs of these palaces there hung myriads of gems, like diamonds, but larger than men; and in among the streets of towers and pyramids and temples, there flowed immense rivers as black as ebony, and swarming with fish that had no eyes.'"*

"Hum!" said the king.

"'We then swam into a region of the sea where we found a lofty mountain, down whose sides there streamed torrents of melted metal, some of which

after having travelled some ten miles up a low barren valley, covered with sand, gravel, and sea shells, fresh as if the tide had retired but yesterday, crosses a low range of sandhills, which has for some distance run parallel to his path. The scene now presented to him is beyond conception singular and desolate. A mass of fragments of trees, all converted into stone, and when struck by his horse's hoof ringing like cast iron, is seen to extend itself for miles and miles around him, in the form of a decayed and prostrate forest. The wood is of a dark brown hue, but retains its form in perfection, the pieces being from one to fifteen feet in length, and from half a foot to three feet in thickness, strewed so closely together, as far as the eye can reach, that an Egyptian donkey can scarcely thread its way through amongst them, and so natural that, were it in Scotland or Ireland, it might pass without remark for some enormous drained bog, on which the exhumed trees lay rotting in the sun. The roots and rudiments of the branches are, in many cases, nearly perfect, and in some the worm-holes eaten under the bark are readily recognisable. The most delicate of the sap vessels, and all the finer portions of the centre of the wood, are perfectly entire, and bear to be examined with the strongest magnifiers. The whole are so thoroughly silicified as to scratch glass and be capable of receiving the highest polish.—*Asiatic Magazine.*

* The Mammoth Cave of Kentucky.

were twelve miles wide and sixty miles long;* while from an abyss on the summit, issued so vast a quantity of ashes that the sun was entirely blotted out from the heavens, and it became darker than the darkest midnight; so that when we were even at the distance of a hundred and fifty miles from the mountain, it was impossible to see the whitest object, however close we held it to our eyes.'"†

"Hum!" said the king.

"'After quitting this coast, the beast continued his voyage until we met with a land in which the nature of things seemed reversed—for we here saw a great lake, at the bottom of which, more than a hundred feet beneath the surface of the water, there flourished in full leaf a forest of tall and luxuriant trees.'"‡

"Hoo!" said the king.

"'Some hundred miles farther on brought us to a climate where the atmosphere was so dense as to sustain iron or steel, just as our own does feathers.'"§

"Fiddle de dee," said the king.

* In Iceland, 1783.

† "During the eruption of Hecla, in 1766, clouds of this kind produced such a degree of darkness that, at Glaumba, which is more than fifty leagues from the mountain, people could only find their way by groping. During the eruption of Vesuvius, in 1794, at Caserta, four leagues distant, people could only walk by the light of torches. On the first of May, 1812, a cloud of volcanic ashes and sand, coming from a volcano in the island of St. Vincent, covered the whole of Barbadoes, spreading over it so intense a darkness that, at mid-day, in the open air, one could not perceive the trees or other objects near him, or even a white handherchief placed at the distance of six inches from the eye."—*Murray*, p. 215, *Phil. edit.*

‡ "In the year 1790, in the Caraccas, during an earthquake, a portion of the granite soil sank and left a lake eight hundred yards in diameter, and from eighty to a hundred feet deep. It was a part of the forest of Aripao which sank, and the trees remained green for several months under the water."—*Murray*, p. 221.

§ The hardest steel ever manufactured may, under the action of a blow-pipe, be reduced to an impalpable powder, which will float readily in the atmospheric air.

"'Proceeding still in the same direction, we presently arrived at the most magnificent region in the whole world. Through it there meandered a glorious river for several thousands of miles. This river was of unspeakable depth, and of a transparency richer than that of amber. It was from three to six miles in width; and its banks, which arose on either side to twelve hundred feet in perpendicular height, were crowned with ever-blossoming trees, and perpetual sweet-scented flowers, that made the whole territory one gorgeous garden; but the name of this luxuriant land was the kingdom of Horror, and to enter it was inevitable death.'"

"Humph!" said the king.

"'We left this kingdom in great haste, and, after some days, came to another, where we were astonished to perceive myriads of monstrous animals with horns resembling scythes upon their heads. These hideous beasts dig for themselves vast caverns in the soil, of a funnel shape, and line the sides of them with rocks, so disposed one upon the other that they fall instantly, when trodden upon by other animals, thus precipitating them into the monsters' dens, where their blood is immediately sucked, and their carcasses afterwards hurled contemptuously out to an immense distance from "the caverns of death."'*

"Pooh!" said the king.

"'Continuing our progress, we perceived a district abounding with vegetables that grew not upon

* The region of the Niger. See *Simmond's "Colonial Magazine."*

The *Myrmeleon*—lion-ant. The term "monster" is equally applicable to small abnormal things and to great, while such epithets as "vast" are merely comparative. The cavern of the myrmeleon is *vast* in comparison with the hole of the common red ant. A grain of silex is also, a "rock".

any soil, but in the air.* There were others that sprang from the substance of other vegetables;† others that derived their sustenance from the bodies of living animals;‡ and then, again, there were others that glowed all over with intense fire;§ others that moved from place to place at pleasure;‖ and what is still more wonderful, we discovered flowers that lived and breathed and moved their limbs at will, and had, moreover, the detestable passion of mankind for enslaving other creatures, and confining them in horrid and solitary prisons until the fulfilment of appointed tasks.'"¶

* The *Epidendron, Flos Aeris*, of the family of the *Orchideæ*, grows with merely the surface of its roots attached to a tree or other object, from which it derives no nutriment—subsisting altogether upon air.

† The *Parasites*, such as the wonderful *Rafflesia Arnaldii*.

‡ *Schouw* advocates a class of plants that grow upon living animals—the *Plantæ Epizoæ*. Of this class are the *Fuci* and *Algæ*.

Mr. J. B. Williams, of Salem, Mass., presented the "National Institute," with an insect from New Zealand, with the following description:—"'*The Hotte*,' a decided caterpillar, or worm, is found growing at the foot of the *Rata* tree, with a plant growing out of its head. This most peculiar and most extraordinary insect travels up both the *Rata* and *Perriri* trees, and entering into the top, eats its way, perforating the trunk of the tree until it reaches the root, it then comes out of the root, and dies, or remains dormant, and the plant propagates out of its head; the body remains perfect and entire, of a harder substance than when alive. From this insect the natives make a coloring for tattooing."

§ In mines and natural caves we find a species of cryptogamous *fungus* that emits an intense phosphorescence.

‖ The orchis, scabius and valisneria.

¶ "The corolla of this flower, (*Aristolochia Clematitis,*) which is tubular, but terminating upwards in a ligulate limb, is inflated into a globular figure at the base. The tubular part is internally beset with stiff hairs, pointing downwards. The globular part contains the pistil, which consists merely of a germen and stigma, together with the surrounding stamens. But the stamens, being shorter than even the germen, cannot discharge the pollen so as to throw it upon the stigma, as the flower stands always upright till after impregnation. And hence, without some additional and peculiar aid, the pollen must necessarily fall down to the bottom of the flower. Now, the aid that nature has furnished in this case, is that of the

"Pshaw!" said the king.

"'Quitting this land, we soon arrived at another in which the bees and the birds are mathematicians of such genius and erudition, that they give daily instructions in the science of geometry to the wise men of the empire. The king of the place having offered a reward for the solution of two very difficult problems, they were solved upon the spot—the one by the bees, and the other by the birds; but the king keeping their solutions a secret, it was only after the most profound researches and labor, and the writing of an infinity of big books, during a long series of years, that the men-mathematicians at length arrived at the identical solutions which had been given upon the spot by the bees and by the birds.'"*

Tiputa Pennicornis, a small insect, which, entering the tube of the corolla in quest of honey, descends to the bottom, and rummages about till it becomes quite covered with pollen; but, not being able to force its way out again, owing to the downward position of the hairs, which converge to a point like the wires of a mouse-trap, and being somewhat impatient of its confinement, it brushes backwards and forwards, trying every corner, till, after repeatedly traversing the stigma, it covers it with pollen sufficient for its impregnation, in consequence of which the flower soon begins to droop, and the hairs to shrink to the side of the tube, effecting an easy passage for the escape of the insect."—*Rev. P. Keith*—"*System of Physiological Botany.*"

* The bees—ever since bees were—have been constructing their cells with just such sides, in just such number, and at just such inclinations, as it has been demonstrated (in a problem involving the profoundest mathematical principles) are the very size, in the very number, and at the very angles, which will afford the creatures the most room that is compatible with the greatest stability of structure.

During the latter part of the last century, the question arose among mathematicians—"to determine the best form that can be given to the sails of a windmill, according to their varying distances from the revolving vanes, and likewise from the centres of the revolution." This is an excessively complex problem; for it is, in other words, to find the best possible position at an infinity of varied distances, and at an infinity of points on the arm. There were a thousand futile attempts to answer the query on the part of the most illustrious mathema-

"Oh my!" said the king.

" 'We had scarcely lost sight of this empire when we found ourselves close upon another, from whose shores there flew over our heads a flock of fowls a mile in breadth, and two hundred and forty miles long; so that, although they flew a mile during every minute, it required no less than four hours for the whole flock to pass over us—in which there were several millions of millions of fowls.' "*

"Oh fy!" said the king.

" 'No sooner had we got rid of these birds, which ocassioned us great annoyance, than we were terrified by the appearance of a fowl of another kind, and infinitely larger than even the rocs which I met in my former voyages; for it was bigger than the biggest of the domes upon your seraglio, oh, most Munificent of Caliphs. This terrible fowl had no head that we could perceive, but was fashioned entirely of belly, which was of a prodigious fatness and roundness, of a soft looking substance, smooth, shining and striped with various colors. In its talons, the monster was bearing away to his eyrie in the heavens, a house from which it had knocked off the roof, and in the interior of which we distinctly saw human beings, who, beyond doubt, were in a state of frightful despair at the horrible fate which awaited them. We shouted with all our might, in the hope of frightening the bird into letting go of its prey; but it merely gave a snort or puff, as if of rage, and

ticians; and when, at length, an undeniable solution was discovered, men found that the wings of a bird had given it with absolute precision, ever since the first bird had traversed the air

* He observed a flock of pigeons passing betwixt Frankfort and the Indiana territory, one mile at least in breadth; it took up four hours in passing; which, at the rate of one mile per minute, gives a length of 240 miles; and, supposing three pigeons to each square yard, gives 2,230,272,000 pigeons.—*"Travels in Canada and the United States," by Lieut. F. Hall.*

then let fall upon our heads a heavy sack which proved to be filled with sand!' "

"Stuff!" said the king.

" 'It was just after this adventure that we encountered a continent of immense extent and of prodigious solidity, but which, nevertheless, was supported entirely upon the back of a sky-blue cow that had no fewer than four hundred horns.' "*

"*That*, now, I believe," said the king, "because I have read something of the kind before, in a book."

" 'We passed immediately beneath this continent, (swimming in between the legs of the cow,) and, after some hours, found ourselves in a wonderful country indeed, which, I was informed by the man-animal, was his own native land, inhabited by things of his own species. This elevated the man-animal very much in my esteem; and in fact, I now began to feel ashamed of the contemptuous familiarity with which I had treated him; for I found that the man-animals in general were a nation of the most powerful magicians, who lived with worms in their brains,† which, no doubt, served to stimulate them by their painful writhings and wrigglings to the most miraculous efforts of imagination.

"Nonsense!" said the king.

" 'Among the magicians, were domesticated several animals of very singular kinds; for example, there was a huge horse whose bones were iron and whose blood was boiling water. In place of corn, he had black stones for his usual food; and yet, in spite of so hard a diet, he was so strong and swift that he would drag a load more weighty than the grandest

* "The earth is upheld by a cow of a blue color, having horns four hundred in number."—*Sale's Koran.*

† "The *Entozoa*, or intestinal worms, have repeatedly been observed in the muscles, and in the cerebral substance of men."—*See Wyatt's Physiology, p.* 143.

temple in this city, at a rate surpassing that of the flight of most birds.' "*

"Twattle!" said the king.

" 'I saw, also, among these people a hen without feathers, but bigger than a camel; instead of flesh and bone she had iron and brick; her blood, like that of the horse, (to whom, in fact, she was nearly related,) was boiling water; and like him she ate nothing but wood or black stones. This hen brought forth very frequently, a hundred chickens in the day; and, after birth, they took up their residence for several weeks within the stomach of their mother.' "†

"Fal lal!" said the king.

" 'One of this nation of mighty conjurors created a man out of brass and wood, and leather, and endowed him with such ingenuity that he would have beaten at chess, all the race of mankind with the exception of the great Caliph, Haroun Alraschid.‡ Another of these magi constructed (of like material) a creature that put to shame even the genius of him who made it; for so great were its reasoning powers that, in a second, it performed calculations of so vast an extent that they would have required the united labor of fifty thousand fleshy men for a year.§ But a still more wonderful conjuror fashioned for himself a mighty thing that was neither man nor beast, but which had brains of lead, intermixed with a black matter like pitch, and fingers that it employed with such incredible speed and dexterity that it would have had no trouble in writing out twenty thousand copies of the Koran in an hour; and this

* On the great Western Railway, between London and Exeter, a speed of 71 miles per hour has been attained. A train weighing 90 tons was whirled from Puddington to Didcot (53 miles,) in 51 minutes.

† The *Eccalobeion*.

‡ Maelzel's Automanton Chess-player.

§ Babbage's Calculating Machine.

with so exquisite a precision, that in all the copies there should not be found one to vary from another by the breadth of the finest hair. This thing was of prodigious strength, so that it erected or overthrew the mightiest empires at a breath; but its powers were exercised equally for evil and for good.'"

"Ridiculous!" said the king.

"'Among this nation of necromancers there was also one who had in his veins the blood of the salamanders; for he made no scruple of sitting down to smoke his chibouc in a red-hot oven until his dinner was thoroughly roasted upon its floor.* Another had the faculty of converting the common metals into gold, without even looking at them during the process.† Another had such a delicacy of touch that he made a wire so fine as to be invisible.‡ Another had such quickness of perception that he counted all the separate motions of an elastic body, while it was springing backwards and forwards at the rate of nine hundred millions of times in a second.'"§

"Absurd!" said the king.

"'Another of these magicians, by means of a fluid that nobody ever yet saw, could make the corpses of his friends brandish their arms, kick out their legs, fight, or even get up and dance at his will.|| Another had cultivated his voice to so great an extent that he could have made himself heard from one end of the earth to the other.¶ Another had so long an arm

* *Chabert*, and, since him, a hundred others.

† The Electrotype.

‡ *Wollaston* made of platinum for the field of views in a telescope, a wire one eighteen-thousandth part of an inch in thickness. It could be seen only by means of the microscope.

§ Newton demonstrated that the retina beneath the influence of the violet ray of the spectrum, vibrated 900,000,000 of times in a second.

|| The Voltaic pile.

¶ The Electro Telegraph transmits intelligence instantaneously—at least so far as regards any distance upon the earth.

that he could sit down in Damascus and indite a letter at Bagdad—or indeed at any distance whatsoever.* Another commanded the lightning to come down to him out of the heavens, and it came at his call; and served him for a plaything when it came. Another took two loud sounds and out of them made a silence. Another constructed a deep darkness out of two brilliant lights.† Another made ice in a red-hot furnace.‡ Another directed the sun to paint his portrait, and the sun did.§ Another took this luminary with the moon and the planets, and having first weighed them with scrupulous accuracy, probed into their depths and found out the solidity of the substance of which they are made. But the whole nation is, indeed, of so surprising a necromantic ability, that not even their infants, nor their commonest cats and dogs have any

* The Electro Telegraph Printing Apparatus.

† Common experiments in Natural Philosophy. If two red rays from two luminous points be admitted into a dark chamber so as to fall on a white surface, and differ in their length by 0.000025 8 of an inch, their intensity is doubled. So also if the difference in length be any whole-number multiple of that fraction. A multiple by $2\frac{1}{4}$, $3\frac{1}{4}$, &c., gives an intensity equal to one ray only; but a multiple by $2\frac{1}{2}$, $3\frac{1}{2}$, &c., gives the result of total darkness. In violet rays similar effects arise when the difference in length is 0.000015 7 of an inch; and with all other rays the results are the same—the difference varying with a uniform increase from the violet to the red.

Analogous experiments in respect to sound produce analogous results.

‡ Place a platina crucible over a spirit lamp, and keep it a red heat; pour in some sulphuric acid, which, though the most volatile of bodies at a common temperature, will be found to become completely fixed in a hot crucible, and not a drop evaporates—being surrounded by an atmosphere of its own, it does not, in fact, touch the sides. A few drops of water are now introduced, when the acid immediately coming in contact with the heated sides of the crucible, flies off in sulphurous acid vapor, and so rapid is its progress, that the caloric of the water passes off with it, which falls a lump of ice to the bottom; by taking advantage of the moment before it is allowed to re-melt, it may be turned out a lump of ice from a red-hot vessel.

§ The Daguerreotype.

difficulty in seeing objects that do not exist at all, or that for twenty millions of years before the birth of the nation itself, had been blotted out from the face of creation.'"*

"Preposterous!" said the king.

"'The wives and daughters of these incomparably great and wise magi,'" continued Scheherazade, without being in any manner disturbed by these frequent and most ungentlemanly interruptions on the part of her husband—"'the wives and daughters of these eminent conjurors are every thing that is accomplished and refined; and would be every thing that is interesting and beautiful, but for an unhappy fatality that besets them, and from which not even the miraculous powers of their husbands and fathers has, hitherto, been adequate to save. Some fatalities come in certain shapes, and some in others—but this of which I speak, has come in the shape of a crotchet."

"A what?" said the king.

"'A crotchet,'" said Scheherazade. "'One of the evil genii who are perpetually upon the watch to inflict ill, has put it into the heads of these accomplished ladies that the thing which we describe as personal beauty, consists altogether in the protu-

* Although light travels 167,000 miles in a second, the distance of 61 Cygni, (the only star whose distance is ascertained,) is so inconceivably great, that its rays would require more than ten years to reach the earth. For stars beyond this, 20—or even 1000 years—would be a moderate estimate. Thus, if they had been annihilated 20, or 1000 years ago, we might still see them to-day, by the light which *started* from their surfaces, 20 or 1000 years in the past time. That many which we see daily are really extinct, is not impossible—not even improbable.

The elder Herschel maintains that the light of the faintest nebulæ seen through his great telescope, must have taken 3,000,000 years in reaching the earth. Some, made visible by Lord Ross' instrument must, then, have required at least 20.000,000.

berance of the region which lies not very far below the small of the back. Perfection of loveliness, they say, is in the direct ratio of the extent of this hump. Having been long possessed of this idea, and bolsters being cheap in that country, the days have long gone by since it was possible to distinguish a woman from a dromedary——'"

"Stop!" said the king—"I can't stand that, and I won't. You have already given me a dreadful headache with your lies. The day, too, I perceive, is beginning to break. How long have we been married?——my conscience is getting to be troublesome again. And then that dromedary touch—do you take me for a fool? Upon the whole, you might as well get up and be throttled."

These words, as I learn from the Isitsöornot, both grieved and astonished Scheherazade; but, as she knew the king to be a man of scrupulous integrity, and quite unlikely to forfeit his word, she submitted to her fate with a good grace. She derived, however, great consolation, (during the tightening of the bowstring,) from the reflection that much of the history remained still untold, and that the petulance of her brute of a husband had reaped for him a most righteous reward, in depriving him of many inconceivable adventures.

MS. FOUND IN A BOTTLE

Qui n'a plus qu'un moment a vivre
N'a plus rien a dissimuler. *Quinault—Atys.*

OF my country and of my family I have little to say. Ill usage and length of years have driven me from the one, and estranged me from the other. Hereditary wealth afforded me an education of no common order, and a contemplative turn of mind enabled me to methodise the stores which early study very diligently garnered up. Beyond all things, the works of the German moralists gave me great delight; not from any ill-advised admiration of their eloquent madness, but from the ease with which my habits of rigid thought enabled me to detect their falsities. I have often been reproached with the aridity of my genius; a deficiency of imagination has been imputed to me as a crime; and the Pyrrhonism of my opinions has at all times rendered me notorious. Indeed, a strong relish for physical philosophy has, I fear, tinctured my mind with a very common error of this age—I mean the habit of referring occurrences, even the least susceptible of such reference, to the principles of that science. Upon the whole, no person could be less liable than myself to be led away from the severe precincts of truth by the *ignes fatui* of superstition. I have thought proper to premise thus much, lest the incredible tale I have to tell should be considered rather the raving of a crude imagination, than the positive experience of a mind to which the reveries of fancy have been a dead letter and a nullity.

After many years spent in foreign travel, I sailed in the year 18—, from the port of Batavia, in the rich and populous island of Java, on a voyage to the Archipelago of the Sunda islands. I went as passenger—having no other inducement than a kind of nervous restlessness which haunted me as a fiend.

Our vessel was a beautiful ship of about four hundred tons, copper-fastened, and built at Bombay of Malabar teak. She was freighted with cotton-wool and oil, from the Lachadive islands. We had also on board coir, jaggeree, ghee, cocoa-nuts, and a few cases of opium. The storage was clumsily done, and the vessel consequently crank.

We got under way with a mere breath of wind, and for many days stood along the eastern coast of Java, without any other incident to beguile the monotony of our course than the occasional meeting with some of the small grabs of the Archipelago to which we were bound.

One evening, leaning over the taffrail, I observed a very singular, isolated cloud, to the N. W. It was remarkable, as well for its color, as from its being the first we had seen since our departure from Batavia. I watched it attentively until sunset, when it spread all at once to the eastward and westward, girting in the horizon with a narrow strip of vapor, and looking like a long line of low beach. My notice was soon afterwards attracted by the dusky-red appearance of the moon, and the peculiar character of the sea. The latter was undergoing a rapid change, and the water seemed more than usually transparent. Although I could distinctly see the bottom, yet, heaving the lead, I found the ship in fifteen fathoms. The air now became intolerably hot, and was loaded with spiral exhalations similar to those arising from heated iron. As night came on,

every breath of wind died away, and a more entire calm it is impossible to conceive. The flame of a candle burned upon the poop without the least perceptible motion, and a long hair, held between the finger and thumb, hung without the possibility of detecting a vibration. However, as the captain said he could perceive no indication of danger, and as we were drifting in bodily to shore, he ordered the sails to be furled, and the anchor let go. No watch was set, and the crew, consisting principally of Malays, stretched themselves deliberately upon deck. I went below—not without a full presentiment of evil. Indeed, every appearance warranted me in apprehending a Simoon. I told the captain my fears; but he paid no attention to what I said, and left me without deigning to give a reply. My uneasiness, however, prevented me from sleeping, and about midnight I went upon deck. As I placed my foot upon the upper step of the companion-ladder, I was startled by a loud, humming noise, like that occasioned by the rapid revolution of a mill wheel, and before I could ascertain its meaning, I found the ship quivering to its centre. In the next instant, a wilderness of foam hurled us upon our beam-ends, and, rushing over us fore and aft, swept the entire decks from stem to stern.

The extreme fury of the blast proved, in a great measure, the salvation of the ship. Although completely water-logged, yet, as her masts had gone by the board, she rose, after a minute, heavily from the sea, and, staggering awhile beneath the immense pressure of the tempest, finally righted.

By what miracle I escaped destruction, it is impossible to say. Stunned by the shock of the water, I found myself, upon recovery, jammed in between the stern-post and rudder. With great difficulty I

gained my feet, and looking dizzily around, was at first struck with the idea of our being among breakers; so terrific, beyond the wildest imagination, was the whirlpool of mountainous and foaming ocean within which we were ingulfed. After a while, I heard the voice of an old Swede, who had shipped with us at the moment of our leaving port. I hallooed to him with all my strength, and presently he came reeling aft. We soon discovered that we were the sole survivors of the accident. All on deck, with the exception of ourselves, had been swept overboard; the captain and mates must have perished as they slept, for the cabins were deluged with water. Without assistance, we could expect to do little for the security of the ship, and our exertions were at first paralyzed by the momentary expectation of going down. Our cable had, of course, parted like pack-thread, at the first breath of the hurricane, or we should have been instantaneously overwhelmed. We scudded with frightful velocity before the sea, and the water made clear breaches over us. The frame-work of our stern was shattered excessively, and, in almost every respect, we had received considerable injury; but to our extreme joy we found the pumps unchoked, and that we had made no great shifting of our ballast. The main fury of the blast had already blown over, and we apprehended little danger from the violence of the wind; but we looked forward to its total cessation with dismay; well believing, that in our shattered condition, we should inevitably perish in the tremendous swell which would ensue. But this very just apprehension seemed by no means likely to be soon verified. For five entire days and nights—during which our only subsistence was a small quantity of jaggeree, procured with great difficulty

from the forecastle—the hulk flew at a rate defying computation, before rapidly succeeding flows of wind, which, without equalling the first violence of the Simoon, were still more terrific than any tempest I had before encountered. Our course for the first four days was, with trifling variations, S. E. and by S.; and we must have run down the coast of New Holland. On the fifth day the cold became extreme, although the wind had hauled round a point more to the northward. The sun arose with a sickly yellow lustre, and clambered a very few degrees above the horizon—emitting no decisive light. There were no clouds apparent, yet the wind was upon the increase, and blew with a fitful and unsteady fury. About noon, as nearly as we could guess, our attention was again arrested by the appearance of the sun. It gave out no light, properly so called, but a dull and sullen glow without reflection, as if all its rays were polarized. Just before sinking within the turgid sea, its central fires suddenly went out, as if hurriedly extinguished by some unaccountable power. It was a dim, silver-like rim, alone, as it rushed down the unfathomable ocean.

We waited in vain for the arrival of the sixth day—that day to me has not arrived—to the Swede, never did arrive. Thence-forward we were enshrouded in pitchy darkness, so that we could not have seen an object at twenty paces from the ship. Eternal night continued to envelop us, all unrelieved by the phosphoric sea-brilliancy to which we had been accustomed in the tropics. We observed too, that, although the tempest continued to rage with unabated violence, there was no longer to be discovered the usual appearance of surf, or foam, which had hitherto attended us. All around were horror, and thick gloom, and a black sweltering desert of ebony.

Superstitious terror crept by degrees into the spirit of the old Swede, and my own soul was wrapped up in silent wonder. We neglected all care of the ship, as worse than useless, and securing ourselves, as well as possible, to the stump of the mizen-mast, looked out bitterly into the world of ocean. We had no means of calculating time, nor could we form any guess of our situation. We were, however, well aware of having made farther to the southward than any previous navigators, and felt great amazement at not meeting with the usual impediments of ice. In the meantime every moment threatened to be our last—every mountainous billow hurried to overwhelm us. The swell surpassed anything I had imagined possible, and that we were not instantly buried is a miracle. My companion spoke of the lightness of our cargo, and reminded me of the excellent qualities of our ship; but I could not help feeling the utter hopelessness of hope itself, and prepared myself gloomily for that death which I thought nothing could defer beyond an hour, as, with every knot of way the ship made, the swelling of the black stupendous seas became more dismally appalling. At times we gasped for breath at an elevation beyond the albatross—at times became dizzy with the velocity of our descent into some watery hell, where the air grew stagnant, and no sound disturbed the slumbers of the kraken.

We were at the bottom of one of these abysses, when a quick scream from my companion broke fearfully upon the night. "See! see!" cried he, shrieking in my ears, "Almighty God! see! see!" As he spoke, I became aware of a dull, sullen glare of red light which streamed down the sides of the vast chasm where we lay, and threw a fitful brilliancy upon our deck. Casting my eyes upwards,

I beheld a spectacle which froze the current of my blood. At a terrific height directly above us, and upon the very verge of the precipitous descent, hovered a gigantic ship, of perhaps four thousand tons. Although upreared upon the summit of a wave more than a hundred times her own altitude, her apparent size still exceeded that of any ship of the line or East Indiaman in existence. Her huge hull was of a deep dingy black, unrelieved by any of the customary carvings of a ship. A single row of brass cannon protruded from her open ports, and dashed from their polished surfaces the fires of innumerable battle-lanterns, which swung to and fro about her rigging. But what mainly inspired us with horror and astonishment, was that she bore up under a press of sail in the very teeth of that supernatural sea, and of that ungovernable hurricane. When we first discovered her, her bows were alone to be seen, as she rose slowly from the dim and horrible gulf beyond her. For a moment of intense terror she paused upon the giddy pinnacle, as if in contemplation of her own sublimity, then trembled and tottered, and—came down.

At this instant, I know not what sudden self-possession came over my spirit. Staggering as far aft as I could, I awaited fearlessly the ruin that was to overwhelm. Our own vessel was at length ceasing from her struggles, and sinking with her head to the sea. The shock of the descending mass struck her, consequently, in that portion of her frame which was already under water, and the inevitable result was to hurl me, with irresistible violence, upon the rigging of the stranger.

As I fell, the ship hove in stays, and went about; and to the confusion ensuing I attributed my escape from the notice of the crew. With little

difficulty I made my way, unperceived, to the main hatchway, which was partially open, and soon found an opportunity of secreting myself in the hold. Why I did so I can hardly tell. An indefinite sense of awe, which at first sight of the navigators of the ship had taken hold of my mind, was perhaps the principle of my concealment. I was unwilling to trust myself with a race of people who had offered, to the cursory glance I had taken, so many points of vague novelty, doubt, and apprehension. I therefore thought proper to contrive a hiding-place in the hold. This I did by removing a small portion of the shifting-boards, in such a manner as to afford me a convenient retreat between the huge timbers of the ship.

I had scarcely completed my work, when a footstep in the hold forced me to make use of it. A man passed by my place of concealment with a feeble and unsteady gait. I could not see his face, but had an opportunity of observing his general appearance. There was about it an evidence of great age and infirmity. His knees tottered beneath a load of years, and his entire frame quivered under the burthen. He muttered to himself, in a low broken tone, some words of a language which I could not understand, and groped in a corner among a pile of singular-looking instruments, and decayed charts of navigation. His manner was a wild mixture of the peevishness of second childhood and the solemn dignity of a God. He at length went on deck, and I saw him no more.

* * * * *

A feeling, for which I have no name, has taken possession of my soul—a sensation which will admit of no analysis, to which the lessons of by-gone time

are inadequate, and for which I fear futurity itself will offer me no key. To a mind constituted like my own, the latter consideration is an evil. I shall never—I know that I shall never—be satisfied with regard to the nature of my conceptions. Yet it is not wonderful that these conceptions are indefinite, since they have their origin in sources so utterly novel. A new sense—a new entity is added to my soul.

* * * * *

It is long since I first trod the deck of this terrible ship, and the rays of my destiny are, I think, gathering to a focus. Incomprehensible men! Wrapped up in meditations of a kind which I cannot divine, they pass me by unnoticed. Concealment is utter folly on my part, for the people *will not* see. It was but just now that I passed directly before the eyes of the mate; it was no long while ago that I ventured into the captain's own private cabin, and took thence the materials with which I write, and have written. I shall from time to time continue this journal. It is true that I may not find an opportunity of transmitting it to the world, but I will not fail to make the endeavor. At the last moment I will enclose the MS. in a bottle, and cast it within the sea.

* * * * *

An incident has occurred which has given me new room for meditation. Are such things the operation of ungoverned chance? I had ventured upon deck and thrown myself down, without attracting any notice, among a pile of ratlin-stuff and old sails, in the bottom of the yawl. While musing upon the singularity of my fate, I unwittingly daubed with a tar-brush the edges of a neatly-folded studding-sail

which lay near me on a barrel. The studding-sail is now bent upon the ship, and the thoughtless touches of the brush are spread out into the word DISCOVERY.

I have made many observations lately upon the structure of the vessel. Although well armed, she is not, I think, a ship of war. Her rigging, build, and general equipment, all negative a supposition of this kind. What she *is not*, I can easily perceive; what she *is*, I fear it is impossible to say. I know not how it is, but in scrutinizing her strange model and singular cast of spars, her huge size and overgrown suits of canvass, her severely simple bow and antiquated stern, there will occasionally flash across my mind a sensation of familiar things, and there is always mixed up with such indistinct shadows of recollection, an unaccountable memory of old foreign chronicles and ages long ago. * * *

I have been looking at the timbers of the ship. She is built of a material to which I am a stranger. There is a peculiar character about the wood which strikes me as rendering it unfit for the purpose to which it has been applied. I mean its extreme *porousness*, considered independently of the worm-eaten condition which is a consequence of navigation in these seas, and apart from the rottenness attendant upon age. It will appear perhaps an observation somewhat over-curious, but this wood would have every characteristic of Spanish oak, if Spanish oak were distended by any unnatural means.

In reading the above sentence, a curious apothegm of an old weather-beaten Dutch navigator comes full upon my recollection. "It is as sure," he was wont to say, when any doubt was entertained of his veracity, "as sure as there is a sea where the ship itself will grow in bulk like the living body of the seaman." * * * * *

About an hour ago, I made bold to thrust myself among a group of the crew. They paid me no manner of attention, and, although I stood in the very midst of them all, seemed utterly unconscious of my presence. Like the one I had at first seen in the hold, they all bore about them the marks of a hoary old age. Their knees trembled with infirmity; their shoulders were bent double with decrepitude; their shrivelled skins rattled in the wind; their voices were low, tremulous, and broken; their eyes glistened with the rheum of years; and their gray hairs streamed terribly in the tempest. Around them, on every part of the deck, lay scattered mathematical instruments of the most quaint and obsolete construction. * * * * *

I mentioned, some time ago, the bending of a studding-sail. From that period, the ship, being thrown dead off the wind, has continued her terrific course due south, with every rag of convass packed upon her, from her trucks to her lower studding-sail booms, and rolling every moment her top-gallant yard-arms into the most appalling hell of water which it can enter into the mind of man to imagine. I have just left the deck, where I find it impossible to maintain a footing, although the crew seem to experience little inconvenience. It appears to me a miracle of miracles that our enormous bulk is not swallowed up at once and forever. We are surely doomed to hover continually upon the brink of eternity, without taking a final plunge into the abyss. From billows a thousand times more stupendous than any I have ever seen, we glide away with the facility of the arrowy sea-gull; and the colossal waters rear their heads above us like demons of the deep, but like demons confined to simple threats, and forbidden to destroy. I am led to at-

tribute these frequent escapes to the only natural cause which can account for such effect. I must suppose the ship to be within the influence of some strong current, or impetuous under-tow. * * *

I have seen the captain face to face, and in his own cabin—but, as I expected, he paid me no attention. Although in his appearance there is, to a casual observer, nothing which might bespeak him more or less than man, still, a feeling of irrepressible reverence and awe mingled with the sensation of wonder with which I regarded him. In stature, he is nearly my own height; that is, about five feet eight inches. He is of a well-knit and compact frame of body, neither robust nor remarkable otherwise. But it is the singularity of the expression which reigns upon the face—it is the intense, the wonderful, the thrilling evidence of old age, so utter, so extreme, which excites within my spirit a sense—a sentiment ineffable. His forehead, although little wrinkled, seems to bear upon it the stamp of a myriad of years. His gray hairs are records of the past, and his grayer eyes are sybils of the future. The cabin floor was thickly strewn with strange, iron-clasped folios, and mouldering instruments of science, and obsolete long-forgotten charts. His head was bowed down upon his hands, and he pored, with a fiery, unquiet eye, over a paper which I took to be a commission, and which, at all events, bore the signature of a monarch. He muttered to himself—as did the first seaman whom I saw in the hold—some low peevish syllables of a foreign tongue; and although the speaker was close at my elbow, his voice seemed to reach my ears from the distance of a mile. * * * * * *

The ship and all in it are imbued with the spirit of Eld. The crew glide to and fro like the ghosts of

buried centuries; their eyes have an eager and uneasy meaning; and when their fingers fall athwart my path in the wild glare of the battle-lanterns, I feel as I have never felt before, although I have been all my life a dealer in antiquities, and have imbibed the shadows of fallen columns at Balbec, and Tadmor, and Persepolis, until my very soul has become a ruin. * * * * *

When I look around me, I feel ashamed of my former apprehensions. If I trembled at the blast which has hitherto attended us, shall I not stand aghast at a warring of wind and ocean, to convey any idea of which, the words tornado and simoon are trivial and ineffective? All in the immediate vicinity of the ship, is the blackness of eternal night, and a chaos of foamless water; but, about a league on either side of us, may be seen, indistinctly and at intervals, stupendous ramparts of ice, towering away into the desolate sky, and looking like the walls of the universe. * * * * *

As I imagined, the ship proves to be in a current—if that appellation can properly be given to a tide which, howling and shrieking by the white ice, thunders on to the southward with a velocity like the headlong dashing of a cataract. * * *

To conceive the horror of my sensations is, I presume, utterly impossible; yet a curiosity to penetrate the mysteries of these awful regions, predominates even over my despair, and will reconcile me to the most hideous aspect of death. It is evident that we are hurrying onwards to some exciting knowledge —some never-to-be-imparted secret, whose attainment is destruction. Perhaps this current leads us to the southern pole itself. It must be confessed that a supposition apparently so wild has every probability in its favor. * * * * *

The crew pace the deck with unquiet and tremulous step; but there is upon their countenances an expression more of the eagerness of hope than of the apathy of despair.

In the meantime the wind is still in our poop, and, as we carry a crowd of canvass, the ship is at times lifted bodily from out the sea! Oh, horror upon horror!—the ice opens suddenly to the right, and to the left, and we are whirling dizzily, in immense concentric circles, round and round the borders of a gigantic amphitheatre, the summit of whose walls is lost in the darkness and the distance. But little time will be left me to ponder upon my destiny! The circles rapidly grow small—we are plunging madly within the grasp of the whirlpool—and amid a roaring, and bellowing, and thundering of ocean and of tempest, the ship is quivering—oh God! and——going down!

Note.—The "MS. Found in a Bottle," was originally published in 1831; and it was not until many years afterwards that I became acquainted with the maps of Mercator, in which the ocean is represented as rushing, by four mouths, into the (northern) Polar Gulf, to be absorbed into the bowels of the earth; the Pole itself being represented by a black rock, towering to a prodigious height.

BON-BON

Quand un bon vin meuble mon estomac
Je suis plus savant que Balzac—
Plus sage que Pibrac;
Mon bras seul faisant l'attaque
De la nation Cossaque,
La mettroit au sac;
De Charon Je passerois le lac
En dormant dans son bac;
J'irois au fier Eac,
Sans que mon cœur fit tic ni tac,
Presenter du tabac.

French Vaudeville.

THAT Pierre Bon-Bon was a *restaurateur* of uncommon qualifications, no man who, during the reign of ——, frequented the little Café in the cul-de-sac Le Febvre at Rouen, will, I imagine, feel himself at liberty to dispute. That Pierre Bon-Bon was, in an equal degree, skilled in the philosophy of that period is, I presume, still more especially undeniable. His *patés à la fois* were beyond doubt immaculate; but what pen can do justice to his essays *sur la Nature*—his thoughts *sur l' Ame*—his observations *sur l' Esprit?* If his *omelettes*—if his *fricandeaux* were inestimable, what *littérateur* of that day would not have given twice as much for an "*Idée de Bon-Bon*" as for all the trash of all the "*Idées*" of all the rest of the *savants?* Bon-Bon had ransacked libraries which no other man had ransacked—had read more than any other would have entertained a notion of reading—had understood more than any other would have conceived the possibility of understanding;

and although, while he flourished, there were not wanting some authors at Rouen to assert "that his *dicta* evinced neither the purity of the Academy, nor the depth of the Lyceum"—although, mark me, his doctrines were by no means very generally comprehended, still it did not follow that they were difficult of comprehension. It was, I think, on account of their self-evidency that many persons were led to consider them abstruse. It is to Bon-Bon—but let this go no farther—it is to Bon-Bon that Kant himself is mainly indebted for his metaphysics. The former was indeed not a Platonist, nor strictly speaking an Aristotelian—nor did he, like the modern Leibnitz, waste those precious hours which might be employed in the invention of a *fricasée*, or, *facili gradú*, the analysis of a sensation, in frivolous attempts at reconciling the obstinate oils and waters of ethical discussion. Not at all. Bon-Bon was Ionic—Bon-Bon was equally Italic. He reasoned *à priori*—He reasoned also *à posteriori*. His ideas were innate—or otherwise. He believed in George of Trebizond—He believed in Bossarion. Bon-Bon was emphatically a—Bon-Bonist.

I have spoken of the philosopher in his capacity of *restaurateur*. I would not, however, have any friend of mine imagine that, in fulfilling his hereditary duties in that line, our hero wanted a proper estimation of their dignity and importance. Far from it. It was impossible to say in which branch of his profession he took the greater pride. In his opinion the powers of the intellect held intimate connection with the capabilities of the stomach. I am not sure, indeed, that he greatly disagreed with the Chinese, who hold that the soul lies in the abdomen. The Greeks at all events were right, he thought, who employed the same word for the mind

and the diaphragm.* By this I do not mean to insinuate a charge of gluttony, or indeed any other serious charge to the prejudice of the metaphysician. If Pierre Bon-Bon had his failings—and what great man has not a thousand?—if Pierre Bon-Bon, I say, had his failings, they were failings of very little importance—faults indeed which, in other tempers, have often been looked upon rather in the light of virtues. As regards one of these foibles, I should not even have mentioned it in this history but for the remarkable prominency—the extreme *alto relievo* —in which it jutted out from the plane of his general disposition.—He could never let slip an opportunity of making a bargain.

Not that he was avaricious—no. It was by no means necessary to the satisfaction of the philosopher, that the bargain should be to his own proper advantage. Provided a trade could be effected—a trade of any kind, upon any terms, or under any circumstances—a triumphant smile was seen for many days thereafter to enlighten his countenance, and a knowing wink of the eye to give evidence of his sagacity.

At any epoch it would not be very wonderful if a humor so peculiar as the one I have just mentioned, should elicit attention and remark. At the epoch of our narrative, had this peculiarity *not* attracted observation, there would have been room for wonder indeed. It was soon reported that, upon all occasions of the kind, the smile of Bon-Bon was wont to differ widely from the downright grin with which he would laugh at his own jokes, or welcome an acquaintance. Hints were thrown out of an exciting nature; stories were told of perilous bargains made in a hurry and repented of at leisure; and

* φρενες

instances were adduced of unaccountable capacities, vague longings, and unnatural inclinations implanted by the author of all evil for wise purposes of his own.

The philosopher had other weaknesses—but they are scarcely worthy our serious examination. For example, there are few men of extraordinary profundity who are found wanting in an inclination for the bottle. Whether this inclination be an exciting cause, or rather a valid proof, of such profundity, it is a nice thing to say. Bon-Bon, as far as I can learn, did not think the subject adapted to minute investigation;—nor do I. Yet in the indulgence of a propensity so truly classical, it is not to be supposed that the *restaurateur* would lose sight of that intuitive discrimination which was wont to characterize, at one and the same time, his *essais* and his *omelettes*. In his seclusions the Vin de Bourgogne had its allotted hour, and there were appropriate moments for the Côtes du Rhone. With him Sauterne was to Medoc what Catullus was to Homer. He would sport with a syllogism in sipping St. Peray, but unravel an argument over Clos de Vougeot, and upset a theory in a torrent of Chambertin. Well had it been if the same quick sense of propriety had attended him in the peddling propensity to which I have formerly alluded—but this was by no means the case. Indeed, to say the truth, *that* trait of mind in the philosophic Bon-Bon *did* begin at length to assume a character of strange intensity and mysticism, and appeared deeply tinctured with the *diablerie* of his favorite German studies.

To enter the little *Café* in the *Cul-de-Sac* Le Febre was, at the period of our tale, to enter the *sanctum* of a man of genius. Bon-Bon was a man of genius.

There was not a *sous-cuisinier* in Rouen, who could not have told you that Bon-Bon was a man of genius. His very cat knew it, and forebore to whisk her tail in the presence of the man of genius. His large water-dog was acquainted with the fact, and upon the approach of his master, betrayed his sense of inferiority by a sanctity of deportment, a debasement of the ears, and a dropping of the lower jaw not altogether unworthy of a dog. It is, however, true that much of this habitual respect might have been attributed to the personal appearance of the metaphysician. A distinguished exterior will, I am constrained to say, have its weight even with a beast; and I am willing to allow much in the outward man of the *restaurateur* calculated to impress the imagination of the quadruped. There is a peculiar majesty about the atmosphere of the little great—if I may be permitted so equivocal an expression—which mere physical bulk alone will be found at all times inefficient in creating. If, however, Bon-Bon was barely three feet in height, and if his head was diminutively small, still it was impossible to behold the rotundity of his stomach without a sense of magnificence nearly bordering upon the sublime. In its size both dogs and men must have seen a type of his acquirements—in its immensity a fitting habitation for his immortal soul.

I might here—if it so pleased me—dilate upon the matter of habiliment, and other mere circumstances of the external metaphysician. I might hint that the hair of our hero was worn short, combed smoothly over his forehead, and surmounted by a conical-shaped white flannel cap and tassels—that his pea-green jerkin was not after the fashion of those worn by the common class of *restaurateurs* at that day—that the sleeves were something fuller

than the reigning costume permitted—that the cuffs were turned up, not as usual in that barbarous period, with cloth of the same quality and color as the garment, but faced in a more fanciful manner with the particolored velvet of Genoa—that his slippers were of a bright purple, curiously filigreed, and might have been manufactured in Japan, but for the exquisite pointing of the toes, and the brilliant tints of the binding and embroidery—that his breeches were of the yellow satin-like material called *aimable*—that his sky-blue cloak, resembling in form a dressing-wrapper, and richly bestudded all over with crimson devices, floated cavalierly upon his shoulders like a mist of the morning—and that his *tout ensemble* gave rise to the remarkable words of Benevenuta, the Improvisatrice of Florence, "that it was difficult to say whether Pierre Bon-Bon was indeed a bird of Paradise, or the rather a very Paradise of perfection."—I might, I say, expatiate upon all these points if I pleased;—but I forbear:—merely personal details may be left to historical novelists;—they are beneath the moral dignity of matter-of-fact.

I have said that "to enter the *Café* in the *Cul-de-Sac* Le Febvre was to enter the *sanctum* of a man of genius"—but then it was only the man of genius who could duly estimate the merits of the *sanctum*. A sign, consisting of a vast folio, swung before the entrance. On one side of the volume was painted a bottle; on the reverse a *pate*. On the back were visible in large letters *Œuvres de Bon-Bon*. Thus was delicately shadowed forth the two-fold occupation of the proprietor.

Upon stepping over the threshold, the whole interior of the building presented itself to view. A long, low-pitched room, of antique construction,

was indeed all the accommodation afforded by the *Café*. In a corner of the apartment stood the bed of the metaphysician. An array of curtains, together with a canopy *à la Greque*, gave it an air at once classic and comfortable. In the corner diagonally opposite, appeared, in direct family communion, the properties of the kitchen and the *bibliotheque*. A dish of polemics stood peacefully upon the dresser. Here lay an oven-full of the latest ethics—there a kettle of duodecimo *melanges*. Volumes of German morality were hand and glove with the grid-iron—a toasting fork might be discovered by the side of Eusebius—Plato reclined at his ease in the frying pan—and contemporary manuscripts were filed away upon the spit.

In other respects the *Café de Bon-Bon* might be said to differ little from the usual *restaurants* of the period. A large fire-place yawned opposite the door. On the right of the fire-place an open cupboard displayed a formidable array of labelled bottles.

It was here, about twelve o'clock one night, during the severe winter of ——, that Pierre Bon-Bon, after having listened for some time to the comments of his neighbors upon his singular propensity—that Pierre Bon-Bon, I say, having turned them all out of his house, locked the door upon them with an oath, and betook himself in no very pacific mood to the comforts of a leather-bottomed arm-chair, and a fire of blazing faggots.

It was one of those terrific nights which are only met with once or twice during a century. It snowed fiercely, and the house tottered to its centre with the floods of wind that, rushing through the crannies of the wall, and pouring impetuously down the chimney, shook awfully the curtains of the philosopher's bed, and disorganized the economy of his patépans.

and papers. The huge folio sign that swung without, exposed to the fury of the tempest, creaked ominously, and gave out a moaning sound from its stanchions of solid oak.

It was in no placid temper, I say, that the metaphysician drew up his chair to its customary station by the hearth. Many circumstances of a perplexing nature had occurred during the day, to disturb the serenity of his meditations. In attempting *des œufs à la Princesse*, he had unfortunately perpetrated an *omelete à la Reine;* the discovery of a principle in ethics had been frustrated by the overturning of a stew; and last, not least, he had been thwarted in one of those admirable bargains which he at all times took such especial delight in bringing to a successful termination. But in the chafing of his mind at these unaccountable vicissitudes, there did not fail to be mingled some degree of that nervous anxiety which the fury of a boisterous night is so well calculated to produce. Whistling to his more immediate vicinity the large black water-dog we have spoken of before, and settling himself uneasily in his chair, he could not help casting a wary and unquiet eye towards those distant recesses of the apartment whose inexorable shadows not even the red firelight itself could more than partially succeed in overcoming. Having completed a scrutiny whose exact purpose was perhaps unintelligible to himself, he drew close to his seat a small table covered with books and papers, and soon became absorbed in the task of re-touching a voluminous manuscript, intended for publication on the morrow.

He had been thus occupied for some minutes, when "I am in no hurry, Monsieur Bon-Bon," suddenly whispered a whining voice in the apartment.

"The devil!" ejaculated our hero, starting to his

feet, overturning the table at his side, and staring around him in astonishment.

"Very true," calmly replied the voice.

"Very true!—what is very true?—how came you here?" vociferated the metaphysician, as his eye fell upon something which lay stretched at full-length upon the bed.

"I was saying," said the intruder, without attending to the interrogatories, "I was saying, that I am not at all pushed for time—that the business upon which I took the liberty of calling, is of no pressing importance—in short, that I can very well wait until you have finished your Exposition."

"My Exposition!—there now!—how do *you* know?—how came *you* to understand that I was writing an Exposition—good God!"

"Hush!" replied the figure, in a shrill under tone; and, arising quickly from the bed, he made a single step towards our hero, while an iron lamp that depended overhead swung convulsively back from his approach.

The philosopher's amazement did not prevent a narrow scrutiny of the stranger's dress and appearance. The outlines of his figure, exceedingly lean, but much above the common height, were rendered minutely distinct by means of a faded suit of black cloth which fitted tight to the skin, but was otherwise cut very much in the style of a century ago. These garments had evidently been intended for a much shorter person than their present owner. His ankles and wrists were left naked for several inches. In his shoes, however, a pair of very brilliant buckles gave the lie to the extreme poverty implied by the other portions of his dress. His head was bare, and entirely bald, with the exception of the hinder-part, from which depended a *queue* of considerable

length. A pair of green spectacles, with side glasses, protected his eyes from the influence of the light, and at the same time prevented our hero from ascertaining either their color or their conformation. About the entire person there was no evidence of a shirt; but a white cravat, of filthy appearance, was tied with extreme precision around the throat, and the ends, hanging down formally side by side, gave (although I dare say unintentionally) the idea of an ecclesiastic. Indeed, many other points both in his appearance and demeanor might have very well sustained a conception of that nature. Over his left ear, he carried, after the fashion of a modern clerk, an instrument resembling the *stylus* of the ancients. In a breast-pocket of his coat appeared conspicuously a small black volume fastened with clasps of steel. This book, whether accidentally or not, was so turned outwardly from the person as to discover the words "*Rituel Catholique*" in white letters upon the back. His entire physiognomy was interestingly saturnine—even cadaverously pale. The forehead was lofty, and deeply furrowed with the ridges of contemplation. The corners of the mouth were drawn down into an expression of the most submissive humility. There was also a clasping of the hands, as he stepped towards our hero—a deep sigh—and altogether a look of such utter sanctity as could not have failed to be unequivocally prepossessing. Every shadow of anger faded from the countenance of the metaphysician, as, having completed a satisfactory survey of his visitor's person, he shook him cordially by the hand, and conducted him to a seat.

There would however be a radical error in attributing this instantaneous transition of feeling in the philosopher, to any one of those causes which might

naturally be supposed to have had an influence. Indeed, Pierre Bon-Bon, from what I have been able to understand of his disposition, was of all men the least likely to be imposed upon by any speciousness of exterior deportment. It was impossible that so accurate an observer of men and things should have failed to discover, upon the moment, the real character of the personage who had thus intruded upon his hospitality. To say no more, the conformation of his visitor's feet was sufficiently remarkable—he maintained lightly upon his head an inordinately tall hat—there was a tremulous swelling about the hinder part of his breeches—and the vibration of his coat tail was a palpable fact. Judge, then, with what feelings of satisfaction our hero found himself thrown thus at once into the society of a person for whom he had at all times entertained the most unqualified respect. He was, however, too much of the diplomatist to let escape him any intimation of his suspicions in regard to the true state of affairs. It was not his cue to appear at all conscious of the high honor he thus unexpectedly enjoyed; but, by leading his guest into conversation, to elicit some important ethical ideas, which might, in obtaining a place in his contemplated publication, enlighten the human race, and at the same time immortalize himself—ideas which, I should have added, his visitor's great age, and well-known proficiency in the science of morals, might very well have enabled him to afford.

Actuated by these enlightened views, our hero bade the gentleman sit down, while he himself took occasion to throw some faggots upon the fire, and place upon the now re-established table some bottles of *Mousseux*. Having quickly completed these operations, he drew his chair *vis-à-vis* to his com-

panion's, and waited until the latter should open the conversation. But, plans even the most skilfully matured, are often thwarted in the outset of their application—and the *restaurateur* found himself *nonplussed* by the very first words of his visitor's speech.

"I see you know me, Bon-Bon," said he: "ha! ha! ha!—he! he! he!—hi! hi! hi!—ho! ho! ho!—hu! hu! hu!"—and the devil, dropping at once the sanctity of his demeanor, opened to its fullest extent a mouth from ear to ear, so as to display a set of jagged and fang-like teeth, and throwing back his head, laughed long, loudly, wickedly, and uproariously, while the black dog, crouching down upon his haunches, joined lustily in the chorus, and the tabby cat, flying off at a tangent, stood up on end, and shrieked in the farthest corner of the apartment.

Not so the philosopher: he was too much a man of the world either to laugh like the dog, or by shrieks to betray the indecorous trepidation of the cat. It must be confessed, he felt a little astonishment to see the white letters which formed the words "*Rituel Catholique*" on the book in his guest's pocket, momently changing both their color and their import, and in a few seconds, in place of the original title, the words "*Régitre des Condamnes*" blaze forth in characters of red. This startling circumstance, when Bon-Bon replied to his visitor's remark, imparted to his manner an air of embarrassment which probably might not otherwise have been observed.

"Why, sir," said the philosopher, "why, sir, to speak sincerely—I believe you are—upon my word—the d——dest—that is to say, I think—I imagine—I *have* some faint—some *very* faint idea—of the remarkable honor——"

"Oh!—ah!—yes!—very well!" interrupted his Majesty; "say no more—I see how it is." And hereupon, taking off his green spectacles, he wiped the glasses carefully with the sleeve of his coat, and deposited them in his pocket.

If Bon-Bon had been astonished at the incident of the book, his amazement was now much increased by the spectacle which here presented itself to view. In raising his eyes, with a strong feeling of curiosity to ascertain the color of his guest's, he found them by no means black, as he had anticipated—nor gray, as might have been imagined—nor yet hazel nor blue—nor indeed yellow nor red—nor purple—nor white—nor green—nor any other color in the heavens above, or in the earth beneath, or in the waters under the earth. In short, Pierre Bon-Bon not only saw plainly that his Majesty had no eyes whatsoever, but could discover no indications of their having existed at any previous period—for the space where eyes should naturally have been, was, I am constrained to say, simply a dead level of flesh.

It was not in the nature of the metaphysician to forbear making some inquiry into the sources of so strange a phenomenon; and the reply of his Majesty was at once prompt, dignified, and satisfactory.

"Eyes! my dear Bon-Bon—eyes! did you say?—oh!—ah!—I perceive! The ridiculous prints, eh, which are in circulation, have given you a false idea of my personal appearance? Eyes!—true. Eyes, Pierre Bon-Bon, are very well in their proper place—*that*, you would say, is the head?—right—the head of a worm. To *you* likewise these optics are indispensable—yet I will convince you that my vision is more penetrating than your own. There is a cat I see in the corner—a pretty cat—look at her—

observe her well. Now, Bon-Bon, do you behold the thoughts—the thoughts, I say—the ideas—the reflections—which are being engendered in her pericranium? There it is, now—you do not! She is thinking we admire the length of her tail and the profundity of her mind. She has just concluded that I am the most distinguished of ecclesiastics, and that you are the most superficial of metaphysicians. Thus you see I am not altogether blind; but to one of my profession, the eyes you speak of would be merely an incumbrance, liable at any time to be put out by a toasting-iron or a pitchfork. To you, I allow, these optical affairs are indispensable. Endeavor, Bon-Bon, to use them well;—*my* vision is the soul."

Hereupon the guest helped himself to the wine upon the table, and pouring out a bumper for Bon-Bon, requested him to drink it without scruple, and make himself perfectly at home.

"A clever book that of yours, Pierre," resumed his Majesty, tapping our friend knowingly upon the shoulder, as the latter put down his glass after a thorough compliance with his visitor's injunction. "A clever book that of yours, upon my honor. It's a work after my own heart. Your arrangement of the matter, I think, however, might be improved, and many of your notions remind me of Aristotle. That philosopher was one of my most intimate acquaintances. I liked him as much for his terrible ill temper, as for his happy knack at making a blunder. There is only one solid truth in all that he has written, and for that I gave him the hint out of pure compassion for his absurdity. I suppose, Pierre Bon-Bon, you very well know to what divine moral truth I am alluding?"

"Cannot say that I——"

"Indeed!—why it was I who told Aristotle, that, by sneezing, men expelled superfluous ideas through the proboscis."

"Which is—hiccup!—undoubtedly the case," said the metaphysician, while he poured out for himself another bumper of Mousseux, and offered his snuff-box to the fingers of his visitor.

"There was Plato, too," continued his Majesty, modestly declining the snuff-box and the compliment it implied—"there was Plato, too, for whom I, at one time, felt all the affection of a friend. You knew Plato, Bon-Bon?—ah, no, I beg a thousand pardons. He met me at Athens, one day, in the Parthenon, and told me he was distressed for an idea. I bade him write down that ο νους εστιν αυλος. He said that he would do so, and went home, while I stepped over to the pyramids. But my conscience smote me for having uttered a truth, even to aid a friend, and hastening back to Athens, I arrived behind the philosopher's chair as he was inditing the 'αυλος.' Giving the lamma a fillip with my finger, I turned it upside down. So the sentence now reads 'ο νους εστιν αυγος,' and is, you perceive, the fundamental doctrine in his metaphysics."

"Were you ever at Rome?" asked the *restaurateur*, as he finished his second bottle of Mousseux, and drew from the closet a larger supply of Chambertin.

"But once, Monsieur Bon-Bon, but once. There was a time," said the devil, as if reciting some passage from a book—"there was a time when occurred an anarchy of five years, during which the republic, bereft of all its officers, had no magistracy besides the tribunes of the people, and these were not legally vested with any degree of executive power—at that time, Monsieur Bon-Bon—at that time *only* I was in Rome, and I have no

earthly acquaintance, consequently, with any of its philosophy."*

"What do you think of—what do you think of—hiccup!—Epicurus?"

"What do I think of *whom?*" said the devil, in astonishment; "you cannot surely mean to find any fault with Epicurus! What do I think of Epicurus! Do you mean me, sir?—*I* am Epicurus! I am the same philosopher who wrote each of the three hundred treatises commemorated by Diogenes Laertes."

"That's a lie!" said the metaphysician, for the wine had gotten a little into his head.

"Very well!—very well, sir!—very well, indeed, sir!" said his Majesty, apparently much flattered.

"That's a lie!" repeated the *restaurateur*, dogmatically, "that's a—hiccup!—a lie!"

"Well, well, have it your own way!" said the devil, pacifically; and Bon-Bon, having beaten his Majesty at an argument, thought it his duty to conclude a second bottle of Chambertin.

"As I was saying," resumed the visitor, "as I was observing a little while ago, there are some very *outre* notions in that book of yours, Monsieur Bon-Bon. What, for instance, do you mean by all that humbug about the soul? Pray, sir, what *is* the soul?"

"The—hiccup!—soul," replied the metaphysician, referring to his MS., "is undoubtedly——"

"No, sir!"

"Indubitably——"

"No, sir!"

"Indisputably——"

"No, sir!"

"Evidently——"

*Ils ecrivaient sur la Philosophie, (*Cicero, Lucretius, Seneca*) mais c'etait la Philosophie Grecque.—*Condorcet.*

"No, sir!"

"Incontrovertibly——"

"No, sir!"

"Hiccup!——"

"No, sir!"

"And beyond all question, a——"

"No, sir, the soul is no such thing!" (Here, the philosopher looking daggers, took occasion to make an end, upon the spot, of his third bottle of Chambertin.)

"Then—hiccup!—pray, sir—what—what is it?

"That is neither here nor there, Monsieur Bon-Bon," replied his Majesty, musingly. "I have tasted—that is to say, I have known some very bad souls, and some too—pretty good ones." Here he smacked his lips, and, having unconsciously let fall his hand upon the volume in his pocket, was seized with a violent fit of sneezing.

He continued:

"There was the soul of Cratinus—passable: Aristophanes—racy: Plato—exquisite—not *your* Plato, but Plato the comic poet: your Plato would have turned the stomach of Cerberus—faugh! Then let me see! there were Nœvius, and Andronicus, and Plautus, and Terentius. Then there were Lucilius, and Catullus, and Naso, and Quintius Flaccus,—dear Quinty! as I called him when he sung a *seculare* for my amusement, while I toasted him, in pure good humor, on a fork. But they want *flavor* these Romans. One fat Greek is worth a dozen of them, and besides will *keep*, which cannot be said of a Quirite.—Let us taste your Sauterne."

Bon-Bon had by this time made up his mind to the *nil admirari*, and endeavored to hand down the bottles in question. He was, however, conscious of a strange sound in the room like the wagging of

a tail. Of this, although extremely indecent in his Majesty, the philosopher took no notice:—simply kicking the dog, and requesting him to be quiet. The visitor continued:

"I found that Horace tasted very much like Aristotle;—you know I am fond of variety. Terentius I could not have told from Menander. Naso, to my astonishment, was Nicander in disguise. Virgilius had a strong twang of Theocritus. Martial put me much in mind of Archilochus—and Titus Livius was positively Polybius and none other."

"Hiccup!" here replied Bon-Bon, and his Majesty proceeded:

"But if I *have* a *penchant*, Monsieur Bon-Bon—if I *have* a *penchant*, it is for a philosopher. Yet, let me tell you, sir, it is not every dev—I mean it is not every gentleman, who knows how to *choose* a philosopher. Long ones are *not* good; and the best, if not carefully shelled, are apt to be a little rancid on account of the gall."

"Shelled!!"

"I mean, taken out of the carcass."

"What do you think of a—hiccup!—physician?"

"*Don't* mention them!—ugh! ugh!" (Here his Majesty retched violently.) "I never tasted but one—that rascal Hippocrates!—smelt of asafœtida—ugh! ugh! ugh!—caught a wretched cold washing him in the Styx—and after all he gave me the cholera morbus."

"The—hiccup!—wretch!" ejaculated Bon-Bon, "the—hiccup!—abortion of a pill-box!"—and the philosopher dropped a tear.

"After all," continued the visitor, "after all, if a dev—if a gentleman wishes to *live*, he must have more talents than one or two; and with us a fat face is an evidence of diplomacy."

"How so?"

"Why we are sometimes exceedingly pushed for provisions. You must know that, in a climate so sultry as mine, it is frequently impossible to keep a spirit alive for more than two or three hours; and after death, unless pickled immediately, (and a pickled spirit is *not* good,) they will—smell—you understand, eh? Putrefaction is always to be apprehended when the souls are consigned to us in the usual way."

"Hiccup!—hiccup!—good God! how *do* you manage?"

Here the iron lamp commenced swinging with redoubled violence, and the devil half started from his seat;—however, with a slight sigh, he recovered his composure, merely saying to our hero in a low tone, "I tell you what, Pierre Bon-Bon, we *must* have no more swearing."

The host swallowed another bumper, by way of denoting thorough comprehension and acquiescence, and the visitor continued:

"Why, there are *several* ways of managing. The most of us starve: some put up with the pickle: for my part I purchase my spirits *vivente corpore*, in which case I find they keep very well."

"But the body!—hiccup!—the body!!!"

"The body, the body—well, what of the body?—oh! ah! I perceive. Why, sir, the body is not *at all* affected by the transaction. I have made innumerable purchases of the kind in my day, and the parties never experienced any inconvenience. There were Cain and Nimrod, and Nero, and Caligula, and Dionysius, and Pisistratus, and—and a thousand others, who never knew what it was to have a soul during the latter part of their lives; yet, sir, these

men adorned society. Why isn't there A——, now, whom you know as well as I? Is *he* not in possession of all his faculties, mental and corporeal? Who writes a keener epigram? Who reasons more wittily? Who——but, stay! I have his agreement in my pocket-book."

Thus saying, he produced a red leather wallet, and took from it a number of papers. Upon some of these Bon-Bon caught a glimpse of the letters *Machi—Maza—Robesp*—with the words *Caligula, George, Elizabeth.* His Majesty selected a narrow slip of parchment, and from it read aloud the following words:

"In consideration of certain mental endowments which it is unnecessary to specify, and in farther consideration of one thousand louis d'or, I, being aged one year and one month, do hereby make over to the bearer of this agreement all my right, title, and appurtenance in the shadow called my soul." (Signed) A . . . . .* (Here his Majesty repeated a name which I do not feel myself justified in indicating more unequivocally.)

"A clever fellow that," resumed he; "but like you, Monsieu. Bon-Bon, he was mistaken about the soul. The soul a shadow, truly! The soul a shadow! Ha! ha! ha!—he! he! he!—hu! hu! hu! Only think of a fricasséed shadow!"

"*Only* think—hiccup!—of a fricasséed shadow!" exclaimed our hero, whose faculties were becoming much illuminated by the profundity of his Majesty's discourse.

"Only think of a—hiccup!—fricasséed shadow!! Now, damme!—hiccup!—humph! If *I* would have been such a—hiccup!—nincompoop. *My* soul, Mr. —humph!"

* *Quere*—Arouet.

"*Your* soul, Monsieur Bon-Bon?"

"Yes, sir—hiccup!—*my* soul is"—

"What, sir?"

"*No* shadow, damme!"

"Did you mean to say"—

"Yes, sir, *my* soul is—hiccup!—humph!—yes sir."

"Did not intend to assert"—

"*My* soul is—hiccup!—peculiarly qualified for—hiccup!—a"—

"What, sir?"

"Stew."

"Ha!"

"Soufflée."

"Eh?"

"Fricassée."

"Indeed!"

"Ragout and fricandeau—and see here, my good fellow! I'll let you have it—hiccup!—a bargain." Here the philosopher slapped his Majesty upon the back.

"Couldn't think of such a thing," said the latter calmly, at the same time rising from his seat. The metaphysician stared.

"Am supplied at present," said his Majesty

"Hic-cup!—e-h?" said the philosopher.

"Have no funds on hand."

"What?"

"Besides, very unhandsome in me"—

"Sir!"

"To take advantage of"—

"Hic-cup!"

"Your present disgusting and ungentlemanly situation."

Here the visitor bowed and withdrew—in what manner could not precisely be ascertained—but in

a well-concerted effort to discharge a bottle at "the villain," the slender chain was severed that depended from the ceiling, and the metaphysician prostrated by the downfall of the lamp.

THE TELL TALE HEART

THE TELL-TALE HEART

TRUE!—nervous—very, very dreadfully nervous I had been and am; but why *will* you say that I am mad? The disease had sharpened my senses—not destroyed—not dulled them. Above all was the sense of hearing acute. I heard all things in the heaven and in the earth. I heard many things in hell. How, then, am I mad? Hearken! and observe how healthily—how calmly I can tell you the whole story.

It is impossible to say how first the idea entered my brain; but once conceived, it haunted me day and night. Object there was none. Passion there was none. I loved the old man. He had never wronged me. He had never given me insult. For his gold I had no desire. I think it was his eye! yes, it was this! One of his eyes resembled that of a vulture—a pale blue eye, with a film over it. Whenever it fell upon me, my blood ran cold; and so by degrees—very gradually—I made up my mind to take the life of the old man, and thus rid myself of the eye for ever.

Now this is the point. You fancy me mad. Madmen know nothing. But you should have seen *me*. You should have seen how wisely I proceeded—with what caution—with what foresight—with what dissimulation I went to work! I was never kinder to the old man than during the whole week before I killed him. And every night, about midnight, I turned the latch of his door and opened it—oh, so gently! And then, when I had made

an opening sufficient for my head, I put in a dark lantern, all closed, closed, so that no light shone out, and then I thrust in my head. Oh, you would have laughed to see how cunningly I thrust it in! I moved it slowly—very, very slowly, so that I might not disturb the old man's sleep. It took me an hour to place my whole head within the opening so far that I could see him as he lay upon his bed. Ha!—would a madman have been so wise as this? And then, when my head was well in the room, I undid the lantern cautiously—oh, so cautiously—cautiously (for the hinges creaked)—I undid it just so much that a single thin ray fell upon the vulture eye. And this I did for seven long nights—every night just at midnight—but I found the eye always closed; and so it was impossible to do the work; for it was not the old man who vexed me, but his Evil Eye. And every morning, when the day broke, I went boldly into the chamber, and spoke courageously to him, calling him by name in a hearty tone, and inquiring how he had passed the night. So you see he would have been a very profound old man, indeed, to suspect that every night, just at twelve, I looked in upon him while he slept.

Upon the eighth night I was more than usually cautious in opening the door. A watch's minute hand moves more quickly than did mine. Never before that night, had I *felt* the extent of my own powers—of my sagacity. I could scarcely contain my feelings of triumph. To think that there I was, opening the door, little by little, and he not even to dream of my secret deeds or thoughts. I fairly chuckled at the idea; and perhaps he heard me; for he moved on the bed suddenly, as if startled. Now you may think that I drew back—but no. His room was as black as pitch with the thick dark-

ness, (for the shutters were close fastened, through fear of robbers,) and so I knew that he could not see the opening of the door, and I kept pushing it on steadily, steadily.

I had my head in, and was about to open the lantern, when my thumb slipped upon the tin fastening, and the old man sprang up in the bed, crying out—"Who's there?"

I kept quite still and said nothing. For a whole hour I did not move a muscle, and in the mean time I did not hear him lie down. He was still sitting up in the bed, listening;—just as I have done, night after night, hearkening to the death watches in the wall.

Presently I heard a slight groan, and I knew it was the groan of mortal terror. It was not a groan of pain or of grief—oh, no!—it was the low stifled sound that arises from the bottom of the soul when overcharged with awe. I knew the sound well. Many a night, just at midnight, when all the world slept, it has welled up from my own bosom, deepening, with its dreadful echo, the terrors that distracted me. I say I knew it well. I knew what the old man felt, and pitied him, although I chuckled at heart. I knew that he had been lying awake ever since the first slight noise, when he had turned in the bed. His fears had been ever since growing upon him. He had been trying to fancy them causeless, but could not. He had been saying to himself—"It is nothing but the wind in the chimney—it is only a mouse crossing the floor," or "it is merely a cricket which has made a single chirp." Yes, he has been trying to comfort himself with these suppositions: but he had found all in vain. *All in vain;* because Death, in approaching him, had stalked with his black shadow before him, and

enveloped the victim. And it was the mournful influence of the unperceived shadow that caused him to feel—although he neither saw nor heard—to *feel* the presence of my head within the room.

When I had waited a long time, very patiently, without hearing him lie down, I resolved to open a little—a very, very little crevice in the lantern. So I opened it—you cannot imagine how stealthily, stealthily—until, at length, a single dim ray, like the thread of the spider, shot from out the crevice and fell upon the vulture eye.

It was open—wide, wide open—and I grew furious as I gazed upon it. I saw it with perfect distinctness—all a dull blue, with a hideous veil over it that chilled the very marrow in my bones; but I could see nothing else of the old man's face or person: for I had directed the ray as if by instinct, precisely upon the damned spot.

And now have I not told you that what you mistake for madness is but over acuteness of the senses?—now, I say, there came to my ears a low, dull, quick sound, such as a watch makes when enveloped in cotton. I knew *that* sound well, too. It was the beating of the old man's heart. It increased my fury, as the beating of a drum stimulates the soldier into courage.

But even yet I refrained and kept still. I scarcely breathed. I held the lantern motionless. I tried how steadily I could maintain the ray upon the eye. Meantime the hellish tattoo of the heart increased. It grew quicker and quicker, and louder and louder every instant. The old man's terror *must* have been extreme! It grew louder, I say, louder every moment!—do you mark me well? I have told you that I am nervous: so I am. And now at the dead hour of the night, amid the dread-

ful silence of that old house, so strange a noise as this excited me to uncontrollable terror. Yet, for some minutes longer I refrained and stood still. But the beating grew louder, louder! I thought the heart must burst. And now a new anxiety seized me—the sound would be heard by a neighbor! The old man's hour had come! With a loud yell, I threw open the lantern and leaped into the room. He shrieked once—once only. In an instant I dragged him to the floor, and pulled the heavy bed over him. I then smiled gaily, to find the deed so far done. But, for many minutes, the heart beat on with a muffled sound. This, however, did not vex me; it would not be heard through the wall. At length it ceased. The old man was dead. I removed the bed and examined the corpse. Yes, he was stone, stone dead. I placed my hand upon the heart and held it there many minutes. There was no pulsation. He was stone dead. His eye would trouble me no more.

If still you think me mad, you will think so no longer when I describe the wise precautions I took for the concealment of the body. The night waned, and I worked hastily, but in silence. First of all I dismembered the corpse. I cut off the head and the arms and the legs.

I then took up three planks from the flooring of the chamber, and deposited all between the scantings. I then replaced the boards so cleverly, so cunningly, that no human eye—not even *his*—could have detected any thing wrong. There was nothing to wash out—no stain of any kind—no blood-spot whatever. I had been too wary for that. A tub had caught all—ha! ha!

When I had made an end of these labors, it was four o'clock—still dark as midnight. As the bell

sounded the hour, there came a knocking at the street door. I went down to open it with a light heart,—for what had I *now* to fear? There entered three men, who introduced themselves, with perfect suavity, as officers of the police. A shriek had been heard by a neighbor during the night; suspicion of foul play had been aroused; information had been lodged at the police office, and they (the officers) had been deputed to search the premises.

I smiled,—for *what* had I to fear? I bade the gentlemen welcome. The shriek, I said, was my own in a dream. The old man I mentioned, was absent in the country. I took my visiters all over the house. I bade them search—search *well.* I led them, at length, to *his* chamber. I showed them his treasures, secure, undisturbed. In the enthusiasm of my confidence, I brought chairs into the room, and desired them *here* to rest from their fatigues, while I myself, in the wild audacity of my perfect triumph, placed my own seat upon the very spot beneath which reposed the corpse of the victim.

The officers were satisfied. My *manner* had convinced them. I was singularly at ease. They sat, and while I answered cheerily, they chatted of familiar things. But, ere long, I felt myself getting pale and wished them gone. My head ached, and I fancied a ringing in my ears: but still they sat and still chatted. The ringing became more distinct:—it continued and became more distinct: I talked more freely to get rid of the feeling: but it continued and gained definitiveness—until, at length, I found that the noise was *not* within my ears.

No doubt I now grew *very* pale;—but I talked more fluently, and with a heightened voice. Yet

the sound increased—and what could I do? It was *a low, dull, quick sound—much such a sound as a watch makes when enveloped in cotton.* I gasped for breath—and yet the officers heard it not. I talked more quickly—more vehemently; but the noise steadily increased. I arose and argued about trifles, in a high key and with violent gesticulations; but the noise steadily increased. Why *would* they not be gone? I paced the floor to and fro with heavy strides, as if excited to fury by the observations of the men—but the noise steadily increased. Oh God! what *could* I do? I foamed—I raved—I swore! I swung the chair upon which I had been sitting, and grated it upon the boards, but the noise arose over all and continually increased. It grew louder—louder—*louder!* And still the men chatted pleasantly, and smiled. Was it possible they heard not? Almighty God!—no, no! They heard!—they suspected!—they *knew!*—they were making a mockery of my horror!—this I thought, and this I think. But anything was better than this agony! Anything was more tolerable than this derision! I could bear those hypocritical smiles no longer! I felt that I must scream or die!—and now—again!—hark! louder! louder! louder! *louder!*—

"Villains!" I shrieked, "dissemble no more! I admit the deed!—tear up the planks!—here, here!—it is the beating of his hideous heart!"

EUREKA

EUREKA

AN ESSAY ON

THE MATERIAL AND SPIRITUAL UNIVERSE

[To the few who love me and whom I love—to those who feel rather than to those who think—to the dreamers and those who put faith in dreams as in the only realities—I offer this Book of Truths, not in its character of Truth-Teller, but for the Beauty that abounds in its Truth; constituting it true. To these I present the composition as an Art-Product alone:—let us say as a Romance; or, if I be not urging too lofty a claim, as a Poem.

What I here propound is true:—therefore it cannot die:—or, if by any means it be now trodden down so that it die, it will "rise again to the Life Everlasting."

Nevertheless it is a Poem only that I wish this work to be judged after I am dead.]

IT is with humility really unassumed—it is with a sentiment even of awe—that I pen the opening sentence of this work: for of all conceivable subjects I approach the reader with the most solemn—the most comprehensive—the most difficult—the most august.

What terms shall I find sufficiently simple in their sublimity—sufficiently sublime in their simplicity—for the mere enunciation of my theme?

I design to speak of the *Physical, Metaphysical and Mathematical—of the Material and Spiritual Universe:—of its Essence, its Origin, its Creation, its Present Condition and its Destiny.* I shall be so rash, moreover, as to challenge the conclusions, and thus, in effect, to question the sagacity, of many of the greatest and most justly reverenced of men.

In the beginning, let me as distinctly as possible announce—not the theorem which I hope to demonstrate—for, whatever the mathematicans may assert, there is, in this world at least, *no such thing* as demonstration—but the ruling idea which, throughout this volume, I shall be continually endeavoring to suggest.

My general proposition, then, is this:—*In the Original Unity of the First Thing lies the Secondary Cause of All Things, with the Germ of their Inevitable Annihilation.*

In illustration of this idea, I propose to take such a survey of the Universe that the mind may be able really to receive and to perceive an individual impression.

He who from the top of Ætna casts his eyes leisurely around is affected chiefly by the *extent* and *diversity* of the scene. Only by a rapid whirling on his heel could he hope to comprehend the panorama in the sublimity of its *oneness*. But as, on the summit of Ætna, *no* man has thought of whirling on his heel, so no man has ever taken into his brain the full uniqueness of the prospect; and so, again, whatever considerations lie involved in this uniqueness, have as yet no practical existence for mankind.

I do not know a treatise in which a survey of the *Universe*—using the word in its most comprehensive and only legitimate acceptation—is taken at all:—and it may be as well here to mention that by the term "Universe," wherever employed without qualification in this essay, I mean to designate *the utmost conceivable expanse of space, with all things, spiritual and material, that can be imagined to exist within the compass of that expanse.*

In speaking of what is *ordinarily* implied by the expression, "Universe," I shall take a phrase of

limitation—"the Universe of stars." Why this distinction is considered necessary, will be seen in the sequel.

But even of treatises on the really limited, although always assumed as the *un*limited, Universe of *stars*, I know none in which a survey, even of this limited Universe, is so taken as to warrant deductions from its *individuality*. The nearest approach to such a work is made in the "Cosmos" of Alexander Von Humboldt. He presents the subject, however, *not* in its individuality but in its generality. His theme, in its last result, is the law of *each* portion of the merely physical Universe, as this law is related to the laws of *every other* portion of this merely physical Universe. His design is simply syncœretical. In a word, he discusses the universality of material relation, and discloses to the eye of Philosophy whatever inferences have hitherto lain hidden *behind* this universality. But however admirable be the succinctness with which he has treated each particular point of his topic, the mere multiplicity of these points occasions, necessarily, an amount of detail, and thus an involution of idea, which preclude all *individuality* of impression.

It seems to me that, in aiming at this latter effect, and, through it, at the consequences—the conclusions—the suggestions—the speculations—or if nothing better offer itself, the mere guesses which may result from it—we require something like a mental gyration on the heel. We need so rapid a revolution of all things about the central point of sight that, while the minutiæ vanish altogether, even the more conspicuous objects become blended into one. Among the vanishing minutiæ, in a survey of this kind, would be all exclusively terrestrial matters. The Earth would be considered

in its planetary relations alone. A man, in this view, becomes mankind; mankind a member of the cosmical family of Intelligences.

And now, before proceeding to our subject proper, let me beg the reader's attention to an extract or two from a somewhat remarkable letter, which appears to have been found corked in a bottle and floating on the *Mare Tenebrarum*—an ocean well described by the Nubian geographer, Ptolemy, Hephestion but little frequented in modern days unless by the Transcendentalists and some other divers for crotchets. The date of this letter, I confess, surprises me even more particularly than its contents; for it seems to have been written in the year *two* thousand eight hundred and forty-eight. As for the passages I am about to transcribe, they, I fancy, will speak for themselves.

"Do you know, my dear friend," says the writer, addressing, no doubt, a contemporary—"Do you know that it is scarcely more than eight or nine hundred years ago since the metaphysicians first consented to relieve the people of the singular fancy that there exist *but two practicable roads to Truth?* Believe it if you can! It appears, however, that long, long ago, in the night of Time, there lived a Turkish philosopher called Aries and surnamed Tottle." [Here, possibly, the letter-writer means Aristotle; the best names are wretchedly corrupted in two or three thousand years.] "The fame of this great man depended mainly upon his demonstration that sneezing is a natural provision, by means of which over-profound thinkers are enabled to expel superfluous ideas through the nose; but he obtained a scarcely less valuable celebrity as the founder, or at all events as the principal propagator, of what was termed the *de*ductive or *à priori* philosophy. He started with what he maintained to be axioms, or self-evident truths:—

and the now well-understood fact that *no* truths are *self*-evident, really does not make in the slightest degree against his speculations:—it was sufficient for his purpose that the truths in question were evident at all. From axioms he proceeded, logically, to results. His most illustrious disciples were one Tuclid, a geometrician," [meaning Euclid] "and one Kant, a Dutchman, the originator of that species of Transcendentalism which, with the change merely of a C for a K, now bears his peculiar name.

"Well, Aries Tottle flourished supreme, until the advent of one Hog, surnamed 'the Ettrick shepherd,' who preached an entirely different system, which he called the *à posteriori* or *in*ductive. His plan referred altogether to sensation. He proceeded by observing, analyzing, and classifying facts —*instantiæ Naturæ*, as they were somewhat affectedly called—and arranging them into general laws. In a word, while the mode of Aries rested on *noumena*, that of Hog depended on phenomena; and so great was the admiration excited by this latter system that, at its first introduction, Aries fell into general disrepute. Finally, however, he recovered ground, and was permitted to divide the empire of Philosophy with his more modern rival:—the savans contenting themselves with proscribing all *other* competitors, past, present, and to come; putting an end to all controversy on the topic by the promulgation of a Median law, to the effect that the Aristotelian and Baconian roads are, and of right ought to be, the sole possible avenues to knowledge:—'Baconian,' you must know, my dear friend," adds the letter-writer at this point, "was an adjective invented as equivalent to Hog-ian, and at the same time more dignified and euphonious.

"Now I do assure you most positively"—proceeds

the epistle—"that I represent these matters fairly; and you can easily understand how restrictions so absurd on their very face must have operated, in those days, to retard the progress of true Science, which makes its most important advances—as all History will show—by seemingly intuitive *leaps*. These ancient ideas confined investigation to crawling; and I need not suggest to you that crawling, among varieties of locomotion, is a very capital thing of its kind;—but because the tortoise is sure of foot, for this reason must we clip the wings of the eagles? For many centuries, so great was the infatuation, about Hog especially, that a virtual stop was put to all thinking, properly so called. No man dared utter a truth for which he felt himself indebted to his soul alone. It mattered not whether the truth was even demonstrably such; for the dogmatizing philosophers of that epoch regarded only *the road* by which it professed to have been attained. The end, with them, was a point of no moment, whatever:—'the means!' they vociferated—'let us look at the means!'—and if, on scrutiny of the means, it was found to come neither under the category Hog, nor under the category Aries (which means ram), why then the savans went no farther, but, calling the thinker a fool and branding him a 'theorist,' would never, thenceforward, have any thing to do either with *him* or with his truths.

"Now, my dear friend," continues the letter-writer, "it cannot be maintained that by the crawling system exclusively adopted, men would arrive at the maximum amount of truth, even in any long series of ages; for the repression of imagination was an evil not to be counterbalanced even by *absolute* certainty in the snail processes. But their certainty was very far from absolute. The error of our

progenitors was quite analogous with that of the wiseacre who fancies he must necessarily see an object the more distinctly, the more closely he holds it to his eyes. They blinded themselves, too, with the impalpable, titillating Scotch snuff of *detail;* and thus the boasted facts of the Hog-ites were by no means always facts—a point of little importance but for the assumption that they always *were*. The vital taint, however, in Baconianism—its most lamentable fount of error—lay in its tendency to throw power and consideration into the hands of merely perceptive men—of those inter-Tritonic minnows, the microscopical savans—the diggers and pedlers of minute *facts*, for the most part in physical science—facts, all of which they retailed at the same price upon the highway; their value depending, it was supposed, simply upon the *fact of their fact*, without reference to their applicability or inapplicability in the development of those ultimate and only legitmate facts, called Law.

"Than the persons"—the letter goes on to say—"than the persons thus suddenly elevated by the Hog-ian philosophy into a station for which they were unfitted—thus transferred from the sculleries into the parlors of Science—from its pantries into its pulpits—than these individuals a more intolerant—a more intolerable set of bigots and tyrants never existed on the face of the earth. Their creed, their text, and their sermon were, alike, the one word '*fact*'—but, for the most part, even of this one word, they knew not even the meaning. On those who ventured to *disturb* their facts with the view of putting them in order and to use, the disciples of Hog had no mercy whatever. All attempts at generalization were met at once by the words 'theoretical,' 'theory,' 'theorist'—all *thought*, to be brief,

was very properly resented as a personal affront to themselves. Cultivating the natural sciences to the exclusion of Metaphysics, the Mathematics, and Logic, many of these Bacon-engendered philosophers—one-idead, one-sided, and lame of a leg—were more wretchedly helpless—more miserably ignorant, in view of all the comprehensible objects of knowledge, than the veriest unlettered hind who proves that he knows something at least, in admitting that he knows absolutely nothing.

"Nor had our forefathers any better right to talk about *certainty*, when pursuing, in blind confidence, the *à priori* path of axioms, or of the Ram. At innumerable points this path was scarcely as straight as a ram's-horn. The simple truth is, that the Aristotelians erected their castles upon a basis far less reliable than air; *for no such things as axioms ever existed or can possibly exist at all.* This they must have been very blind indeed not to see, or at least to suspect; for, even in their own day, many of their long-admitted 'axioms' had been abandoned: '*ex nihilo nihil fit*,' for example, and a 'thing cannot act where it is not,' and 'there cannot be antipodes,' and 'darkness cannot proceed from light.' These and numerous similar propositions formerly accepted, without hesitation, as axioms, or undeniable truths, were, even at the period of which I speak, seen to be altogether untenable:—how absurd in these people, then, to persist in relying upon a basis, as immutable, whose mutability had become so repeatedly manifest!

"But, even through evidence afforded by themselves against themselves, it is easy to convict these *à priori* reasoners of the grossest unreason—it is easy to show the futility—the impalpability of their axioms in general. I have now lying before me"—

it will be observed that we still proceed with the letter—"I have now lying before me a book printed about a thousand years ago. Pundit assures me that it is decidedly the cleverest ancient work on its topic, which is 'Logic.' The author, who was much esteemed in his day, was one Miller, or Mill; and we find it recorded of him, as a point of some importance, that he rode a mill-horse whom he called Jeremy Bentham:—but let us glance at the volume itself.

"Ah!—'Ability or inability to conceive,' says Mr. Mill, very properly, 'is *in no case* to be received as a criterion of axiomatic truth.' Now, that this is a palpable truism, no one in his senses will deny. *Not* to admit the proposition, is to insinuate a charge of variability in Truth itself, whose very title is a synonym of the Steadfast. If ability to conceive be taken as a criterion of Truth, then a truth to *David* Hume would very seldom be a truth to *Joe;* and ninety-nine hundredths of what is undeniable in Heaven, would be demonstrable falsity upon Earth. The proposition of Mr. Mill, then, is sustained. I will not grant it to be an *axiom;* and this merely because I am showing that *no* axioms exist; but, with a distinction which could not have been cavilled at even by Mr. Mill himself, I am ready to grant that, *if* an axiom *there be*, then the proposition of which we speak has the fullest right to be considered an axiom—that no *more* absolute axiom *is*—and, consequently, that any subsequent proposition which shall conflict with this one primarily advanced, must be either a falsity in itself—that is to say, no axiom—or, if admitted axiomatic, must at once neutralize both itself and its predecessor.

"And now, by the logic of their own propounder, let us proceed to test any one of the axioms propounded. Let us give Mr. Mill the fairest of play.

We will bring the point to no ordinary issue. We will select for investigation no common-place axiom —no axiom of what, not the less preposterously because only impliedly, he terms his secondary class —as if a positive truth by definition could be either more or less positively a truth: we will select, I say, no axiom of an unquestionability so questionable as is to be found in Euclid. We will not talk, for example, about such propositions as that two straight lines cannot enclose a space, or that the whole is greater than any one of its parts. We will afford the logician *every* advantage. We will come at once to a proposition which he regards as the acme of the unquestionable—as the quintessence of axiomatic undeniability. Here it is:—'Contradictions cannot *both* be true—that is, cannot coexist in nature.' Here Mr. Mill means, for instance,—and I give the most forcible instance conceivable,—that a tree must be either a tree or *not* a tree—that it cannot be at the same time a tree *and* not a tree: all which is quite reasonable of itself, and will answer remarkably well as an axiom, until we bring it into collation with an axiom insisted upon a few pages before; in other words—words which I have previously employed—until we test it by the logic of its own propounder. 'A tree,' Mr. Mill asserts, must be either a tree or *not* a tree.' Very well: and now let me ask him, *why*. To this little query there is but one response—I defy any man living to invent a second. The sole answer is this:—'Because we find it *impossible to conceive* that a tree can be anything else than a tree or not a tree.' This, I repeat, is Mr. Mill's sole answer—he will not *pretend* to suggest another; and yet, by his own showing, his answer is clearly no answer at all—for has he not already required us to admit, *as an axiom*, that

ability or inability to conceive, is *in no case* to be taken as a criterion of axiomatic truth? Thus all—absolutely *all* his argumentation is at sea without a rudder. Let it not be urged that an exception from the general rule is to be made, in cases where the 'impossibility to conceive' is so peculiarly great as when we are called upon to conceive a tree *both* a tree and *not* a tree. Let no attempt, I say, be made at urging this sotticism; for, in the first place, there are no *degrees* of 'impossibility,' and thus no one impossible conception can be *more* peculiarly impossible than another impossible conception: in the second place, Mr. Mill himself—no doubt after thorough deliberation—has most distinctly, and most rationally, excluded all opportunity for exception, by the emphasis of his proposition, that, *in no case*, is ability or inability to conceive, to be taken as a criterion of axiomatic truth: in the third place, even were exceptions admissible at all, it remains to be shown how any exception is admissible *here*. That a tree can be both a tree and not a tree, is an idea which the angels, or the devils, *may* entertain, and which no doubt many an earthly Bedlamite, or Trancendentalist, *does*.

"Now I do not quarrel with these ancients," continues the letter-writer, "*so much* on account of the transparent frivolity of their logic—which, to be plain, was baseless, worthless, and fantastic altogether—as on account of their pompous and infatuate proscription of all *other* roads to Truth than the two narrow and crooked paths—the one of creeping and the other of crawling—to which, in their ignorant perversity, they have dared to confine the Soul—the Soul which loves nothing so well as to soar in those regions of illimitable intuition which are utterly incognizant of '*path*.'

"By the by, my dear friend, is it not an evidence of the mental slavery entailed upon those bigoted people by their Hogs and Rams, that in spite of the eternal prating of their savans about *roads* to Truth, none of them fell, even by accident, into what we now so distinctly perceive to be the broadest, the straightest, and most available of all mere roads—the great thoroughfare—the majestic highway of the *Consistent?* Is it not wonderful that they should have failed to deduce from the works of God the vitally momentous consideration that *a perfect consistency can be nothing but an absolute truth?* How plain—how rapid our progress since the late announcement of this proposition! By its means, investigation has been taken out of the hands of the ground-moles, and given as a duty, rather than as a task, to the true—to the *only* true thinkers—to the generally-educated men of ardent imagination. These latter—our Keplers—our Laplaces—'speculate'—'theorize'—these are the terms—can you not fancy the shout of scorn with which they would be received by our progenitors, were it possible for them to be looking over my shoulders as I write? The Keplers, I repeat, speculate—theorize—and their theories are merely corrected—reduced—sifted—cleared, little by little, of their chaff of inconsistency—until at length there stands apparent an unencumbered *Consistency*—a consistency which the most stolid admit—because it *is* a consistency—to be an absolute and unquestionable *Truth.*

"I have often thought, my friend, that it must have puzzled these dogmaticians of a thousand years ago, to determine, even, by which of their two boasted roads it is that the cryptographist attains the solution of the more complicated cy-

phers—or by which of them Champollion guided mankind to those important and innumerable truths which, for so many centuries, have lain entombed amid the phonetical hieroglyphics of Egypt. In especial, would it not have given these bigots some trouble to determine by which of their two roads was reached the most momentous and sublime of *all* their truths —the truth—the fact of *gravitation?* Newton deduced it from the laws of Kepler. Kepler admitted that these laws he *guessed*—these laws whose investigation disclosed to the greatest of British astronomers that principle, the basis of all (existing) physical principle, in going behind which we enter at once the nebulous kingdom of Metaphysics. Yes!—these vital laws Kepler *guessed*—that is to say, he *imagined* them. Had he been asked to point out either the *de*ductive or *in*ductive route by which he attained them, his reply might have been —'I know nothing about *routes*—but I *do* know the machinery of the Universe. Here it is. I grasped it with *my soul*—I reached it through mere dint of *intuition*. Alas, poor ignorant old man! Could not any metaphysician have told him that what he called 'intuition' was but the conviction resulting from *de*ductions or *in*ductions of which the processes were so shadowy as to have escaped his consciousness, eluded his reason, or bidden defiance to his capacity of expression? How great a pity it is that some 'moral philosopher' had not enlightened him about all this! How it would have comforted him on his death-bed to know that, instead of having gone intuitively and thus unbecomingly, he had, in fact, proceeded decorously and legitimately—that is to say Hog-ishly, or at least Ram-ishly—into the vast halls where lay gleaming, untended, and hitherto untouched by

mortal hand—unseen by mortal eye—the imperishable and priceless secrets of the Universe!

"Yes, Kepler was essentially a *theorist;* but this title, *now* of so much sanctity, was, in those ancient days, a designation of supreme contempt. It is only *now* that men begin to appreciate that divine old man—to sympathise with the prophetical and poetical rhapsody of his ever memorable words. For *my* part," continues the unknown correspondent, "I glow with a sacred fire when I even think of them, and feel that I shall never grow weary of their repetition:—in concluding this letter, let me have the real pleasure of transcribing them once again:—'*I care not whether my work be read now or by posterity. I can afford to wait a century for readers when God himself has waited six thousand years for an observer. I triumph. I have stolen the golden secret of the Egyptians. I will indulge my sacred fury.*'"

Here end my quotations from this very unaccountable and, perhaps, somewhat impertinent epistle; and perhaps it would be folly to comment, in any respect, upon the chimerical, not to say revolutionary, fancies of the writer—whoever he is—fancies so radically at war with the well-considered and well-settled opinions of this age. Let us proceed then, to our legitimate thesis, *The Universe.*

This thesis admits a choice between two modes of discussion:—We may *as*cend or *de*scend. Beginning at our own point of view, at the Earth on which we stand, we may pass to the other planets of our system, thence to the Sun, thence to our system considered collectively, and thence, through other systems, indefinitely outwards; or, commencing on high at some point as definite as we can make it or conceive it, we may come down to the

habitation of Man. Usually, that is to say, in ordinary essays on Astronomy, the first of these two modes is, with certain reservation, adopted: this for the obvious reason that astronomical *facts*, merely, and principles, being the object, that object is best fulfilled in stepping from the known because proximate, gradually onward to the point where all certitude becomes lost in the remote. For my present purpose, however, that of enabling the mind to take in, as if from afar and at one glance, a distant conception of the *individual* Universe—it is clear that a descent to small from great—to the outskirts from the centre (if we could establish a centre)—to the end from the beginning (if we could fancy a beginning) would be the preferable course, but for the difficulty, if not impossibility, of presenting, in this course, to the unastronomical, a picture at all comprehensible in regard to such considerations as are involved in *quantity*—that is to say, in number, magnitude and distance.

Now, distinctness—intelligibility, at all points, is a primary feature in my general design. On important topics it is better to be a good deal prolix than even a very little obscure. But abstruseness is a quality appertaining to no subject *per se*. All are alike, in facility of comprehension, to him who approaches them by properly graduated steps. It is merely because a stepping-stone, here and there, is heedlessly left unsupplied in our road to Differential Calculus, that this latter is not altogether as simple a thing as a sonnet by Mr. Solomon Seesaw.

By way of admitting, then, no *chance* for misapprehension, I think it advisable to proceed as if even the more obvious facts of Astronomy were unknown to the reader. In combining the two modes of discussion to which I have referred, I

propose to avail myself of the advantages peculiar to each—and very especially of the *iteration in detail* which will be unavoidable as a consequence of the plan. Commencing with a descent, I shall reserve for the return upwards those indispensable considerations of *quantity* to which allusion has already been made.

Let us begin, then, at once, with that merest of words, "Infinity." This, like "God," "spirit," and some other expressions of which the equivalents exist in all languages, is by no means the expression of an idea, but of an effort at one. It stands for the possible attempt at an impossible conception. Man needed a term by which to point out the *direction* of this effort—the cloud behind which lay, forever invisible, the *object* of this attempt. A word, in fine, was demanded, by means of which one human being might put himself in relation at once with another human being and with a certain *tendency* of the human intellect. Out of this demand arose the word, "Infinity;" which is thus the representative but of the *thought of a thought*.

As regards *that* infinity now considered—the infinity of space—we often hear it said that "its idea is admitted by the mind—is acquiesced in—is entertained—on account of the greater difficulty which attends the conception of a limit." But this is merely one of those *phrases* by which even profound thinkers, time out of mind, have occasionally taken pleasure in deceiving *themselves*. The quibble lies concealed in the word "difficulty." "The mind," we are told, "entertains the idea of *limitless*, through the greater *difficulty* which it finds in entertaining that of *limited*, space." Now, were the proposition but fairly *put*, its absurdity would become transparent at once. Clearly, there is

no mere *difficulty* in the case. The assertion intended, if presented *according* to its intention, and without sophistry, would run thus:—"The mind admits the idea of limitless, through the greater *impossibility* of entertaining that of limited, space."

It must be immediately seen that this is not a question of two statements between whose respective credibilities—or of two arguments between whose respective validities—the *reason* is called upon to decide:—it is a matter of two conceptions, directly conflicting, and each avowedly impossible, one of which the *intellect* is supposed to be capable of entertaining, on account of the greater *impossibility* of entertaining the other. The choice is *not* made between two difficulties; it is merely *fancied* to be made between two impossibilities. Now of the former, there *are* degrees, but of the latter, none:—just as our impertinent letter-writer has already suggested. A task *may* be more or less difficult; but it is either possible or not possible—there are no gradations. It *might* be more *difficult* to overthrow the Andes than an ant-hill; but it *can* be no more *impossible* to annihilate the matter of the one than the matter of the other. A man may jump ten feet with less *difficulty* than he can jump twenty, but the *impossibility* of his leaping to the moon is not a wit less than that of his leaping to the dog-star.

Since all this is undeniable: since the choice of mind is to be made between *impossibilities* of conception: since one impossibility cannot be greater than another: and since, thus, one cannot be preferred to another: the philosophers who not only maintain, on the grounds mentioned, man's *idea* of infinity but, on account of such suppositious idea, *infinity itself*—are plainly engaged in demonstrating one impossible thing to be possible by showing how

it is that some one other thing—is impossible too. This, it will be said, is nonsense, and perhaps it is; indeed I think it very capital nonsense, but forego all claim to it as nonsense of mine.

The readiest mode, however, of displaying the fallacy of the philosophical argument on this question, is by simply adverting to a *fact* respecting it which has been hitherto quite overlooked—the fact that the argument alluded to both proves and disproves its own proposition. "The mind is impelled," say the theologians and others, "to admit a *First Cause*, by the superior difficulty it experiences in conceiving cause beyond cause without end." The quibble, as before, lies in the word "difficulty," but *here* what is it employed to sustain? A First Cause. And what is a First Cause? An ultimate termination of causes. And what is an ultimate termination of causes? Finity—the Finite. Thus the one quibble, in two processes, by God knows how many philosophers, is made to support now Finity and now Infinity; could it not be brought to support something besides? As for the quibbles, *they*, at least, are insupportable. But, to dismiss them; what they prove in the one case is the identical nothing which they demonstrate in the other.

Of course, no one will suppose that I here contend for the absolute impossibility of *that* which we attempt to convey in the word "Infinity." My purpose is but to show the folly of endeavoring to prove Infinity itself, or even our conception of it, by any such blundering ratiocination as that which is ordinarily employed.

Nevertheless, as an individual, I may be permitted to say that I *cannot* conceive Infinity, and am convinced that no human being can. A mind not thoroughly self-conscious, not accustomed to the

introspective analysis of its own operations, will, it is true, often deceive itself by supposing that it has entertained the conception of which we speak. In the effort to entertain it, we proceed step beyond step, we fancy point still beyond point; and so long as we *continue* the effort, it may be said, in fact, that we are *tending* to the formation of the idea designed; while the strength of the impression that we actually form or have formed, is in the ratio of the period during which we keep up the mental endeavor. But it is in the act of discontinuing the endeavor—of fulfilling (as we think) the idea—of putting the finishing stroke (as we suppose) to the conception—that we overthrow at once the whole fabric of our fancy by resting upon some one ultimate, and, therefore, definite point. This fact, however, we fail to perceive, on account of the absolute coincidence, in time, between the settling down upon the ultimate point and the act of cessation in thinking. In attempting, on the other hand, to frame the idea of a *limited* space, we merely converse the processes which involve the impossibility.

We *believe* in a God. We may or may not *believe* in finite or in infinite space; but our belief, in such cases, is more properly designated as *faith*, and is a matter quite distinct from that belief proper—from that *intellectual* belief—which presupposes the mental conception.

The fact is, that, upon the enunciation of any one of that class of terms to which "Infinity" belongs—the class representing *thoughts of thought*—he who has a right to say that he thinks *at all*, feels himself called upon, *not* to entertain a conception, but simply to direct his mental vision toward some given point, in the intellectual firmament, where lies a nebula never to be resolved. To solve it, indeed, he makes no effort:

for with a rapid instinct he comprehends, not only the impossibility, but, as regards all human purposes, the *inessentiality* of its solution. He perceives that the Deity has not *designed* it to be solved. He sees, at once, that it lies *out* of the brain of man, and even *how*, if not exactly *why*, it lies out of it. There *are* people, I am aware, who, busying themselves in attempts at the unattainable, acquire very easily, by dint of the jargon they emit, among those thinkers-that-they-think with whom darkness and depth are synonymous, a kind of cuttle-fish reputation for profundity; but the finest quality of Thought is its self-cognizance; and with some little equivocation, it may be said that no fog of the mind can well be greater than that which, extending to the very boundaries of the mental domain, shuts out even these boundaries themselves from comprehension.

It will now be understood that, in using the phrase, "Infinity of Space," I make no call upon the reader to entertain the impossible conception of an *absolute* infinity. I refer simply to the "*utmost conceivable expanse*" of space—a shadowy and fluctuating domain, now shrinking, now swelling, in accordance with the vacillating energies of the imagination.

Hitherto, the Universe of stars has always been considered as coincident with the Universe proper, as I have defined it in the commencement of this Discourse. It has been always either directly or indirectly assumed—at least since the dawn of intelligible Astronomy—that, were it possible for us to attain any given point in space, we should still find, on all sides of us, an interminable succession of stars. This was the untenable idea of Pascal when making perhaps the most successful attempt ever made, at periphrasing the conception for which we struggle

in the word "Universe." "It is a sphere," he says, "of which the center is everywhere, the circumference, nowhere." But although his intended definition is, in fact, *no* definition of the Universe of *stars*, we may accept it, with some mental reservation, as a definition (rigorous enough for all practical purposes) of the Universe *proper*—that is to say, of the Universe of *space*. This latter, then, let us regard as "*a sphere of which the centre is everywhere, the circumference nowhere.*" In fact, while we find it impossible to fancy an *end* to space, we have no difficulty in picturing to ourselves any one of an infinity of *beginnings*.

As our starting point, then, let us adopt the *Godhead*. Of this Godhead, *in itself*, he alone is not imbecile—he alone is not impious who propounds——nothing. "*Nous ne connaissons rien,*" says the Baron de Bielfeld—"*Nous ne connaissons rien de la nature ou de l'essence de Dieu:—pour savior ce qu'il est, il faut être Dieu même.*"—"We know absolutely *nothing* of the nature or essence of God:—in order to comprehend what he is, we should have to be God ourselves."

"*We should have to be God ourselves!*"—With a phrase so startling as this yet ringing in my ears, I nevertheless venture to demand if this our present ignorance of the Deity is an ignorance to which the soul is *everlastingly* condemned.

By *Him*, however—*now*, at least, the Incomprehensible—by Him—assuming him as a *Spirit*—that is to say, as *not Matter*—a distinction which, for all intelligible purposes, will stand well instead of a definition—by Him, then, existing as Spirit, let us content ourselves, to-night, with supposing to have been *created*, or made out of Nothing, by dint of his Volition—at some point of Space which we will take as a centre—at some period into which we do not

pretend to inquire, but at all events immensely remote—by Him, then again, let us suppose to have been created——*what?* This is a vitally momentous epoch in our considerations. *What* is it that we are justified—that alone we are justified in supposing to have been, primarily and solely, *created?*

We have attained a point where only *Intuition* can aid us:—but now let me recur to the idea which I have already suggested as that alone which we can properly entertain of intuition. It is but *the conviction arising from those inductions or deductions of which the processes are so shadowy as to escape our consciousness, elude our reason, or defy our capacity of expression.* With this understanding, I now assert—that an intuition altogether irresistible, although inexpressible, forces me to the conclusion that what God originally created—that that Matter which, by dint of his Volition, he first made from his Spirit, or from Nihility, *could* have been nothing but Matter in its utmost conceivable state of——what?—of *Simplicity?*

This will be found the sole absolute *assumption* of my Discourse. I use the word "assumption" in its ordinary sense; yet I maintain that even this my primary proposition, is very, very far indeed, from being really a mere assumption. Nothing was ever more certainly—no human conclusion was ever, in fact, more regularly—more rigorously *de*duced:—but, alas! the processes lie out of the human analysis—at all events are beyond the utterance of the human tongue.

Let us now endeavor to conceive what Matter must be, when, or if, in its absolute extreme of *Simplicity.* Here the Reason flies at once to Imparticularity—to a particle—to *one* particle—a particle of *one* kind—of *one* character—of *one* nature—of *one size*—of one

form—a particle, therefore, "*without* form and void" —a particle positively a particle at all points—a particle absolutely unique, individual, undivided, and not indivisible only because He who *created* it, by dint of his Will, can by an infinitely less energetic exercise of the same Will, as a matter of course, divide it.

Oneness, then, is all that I predicate of the originally created Matter; but I propose to show that this *Oneness is a principle abundantly sufficient to account for the constitution, the existing phœnomena and the plainly inevitable annihilation of at least the material Universe.*

The willing into being the primordial particle, has completed the act, or more properly the *conception* of Creation. We now proceed to the ultimate purpose for which we are to suppose the Particle created —that is to say, the ultimate purpose so far as our considerations *yet* enable us to see it—the constitution of the Universe from it, the Particle.

This constitution has been effected by *forcing* the originally and therefore normally *One* into the abnormal condition of *Many*. An action of this character implies reaction. A diffusion from Unity, under the conditions, involves a tendency to return into Unity—a tendency ineradicable until satisfied. But on these points I will speak more fully hereafter.

The assumption of absolute Unity in the primordial Particle includes that of infinite divisibility. Let us conceive the Particle, then, to be only not totally exhausted by diffusion into Space. From the one Particle, as a centre, let us suppose to be irradiated spherically—in all directions—to immeasurable but still definite distances in the previously vacant space—a certain inexpressibly great yet

limited number of unimaginably yet not infinitely minute atoms.

Now, of these atoms, thus diffused, or upon diffusion, what conditions are we permitted—not to assume, but to infer, from consideration as well of their source as of the character of the design apparent in their diffusion? *Unity* being their source, and *difference from Unity* the character of the design manifested in their diffusion, we are warranted in supposing this character to be at least *generally* preserved throughout the design, and to form a portion of the design itself:—that is to say, we shall be warranted in conceiving continual differences at all points from the uniquity and simplicity of the origin. But, for these reasons, shall we be justified in imagining the atoms heterogeneous, dissimilar, unequal, and inequidistant? More explicitly—are we to consider no two atoms as, at their diffusion, of the same nature, or of the same form, or of the same size?—and, after fulfilment of their diffusion into Space, is absolute inequidistance, each from each, to be understood of all of them? In such arrangement, under such conditions, we most easily and immediately comprehend the subsequent most feasible carrying out to completion of any such design as that which I have suggested—the design of variety out of unity—diversity out of sameness—heterogeneity out of homogeneity—complexity out of simplicity—in a word, the utmost possible multiplicity of *relation* out of the emphatically irrelative *One*. Undoubtedly, therefore, we *should* be warranted in assuming all that has been mentioned, but for the reflection, first, that supererogation is not presumable of any Divine Act; and, secondly, that the object supposed in view, appears as feasible when some of the conditions in question are dispensed

with, in the beginning, as when all are understood immediately to exist. I mean to say that some are involved in the rest, or so instantaneous a consequence of them as to make the distinction inappreciable. Difference of *size*, for example, will at once be brought about through the tendency of one atom to a second, in preference to a third, on account of particular inequidistance; which is to be comprehended as *particular inequidistances between centres of quantity, in neighboring atoms of different form*—a matter not at all interfering with the generally-equable distribution of the atoms. Difference of *kind*, too, is easily conceived to be merely a result of differences in size and form, taken more or less conjointly:—in fact, since the *Unity* of the Particle Proper implies absolute homogeneity, we cannot imagine the atoms, at their diffusion, differing in kind, without imagining, at the same time, a special exercise of the Divine Will, at the emission of each atom, for the purpose of effecting, in each, a change of its essential nature:—so fantastic an idea is the less to be indulged, as the object proposed is seen to be thoroughly attainable without such minute and elaborate interposition. We perceive, therefore, upon the whole, that it would be supererogatory, and consequently unphilosophical, to predicate of the atoms, in view of their purposes, any thing more than *difference of form* at their dispersion, with particular inequidistance after it—all other differences arising at once out of these, in the very first processes of mass-constitution:—We thus establish the Universe on a purely *geometrical* basis. Of course, it is by no means necessary to assume absolute difference, even of form, among *all* the atoms irradiated—any more than absolute particular inequidistance of each from each. We are required to conceive merely that no

neighboring atoms are of similar form—no atoms which can ever approximate, until their inevitable reunition at the end.

Although the immediate and perpetual *tendency* of the disunited atoms to return into their normal Unity, is implied, as I have said, in their abnormal diffusion, still it is clear that this tendency will be without consequence—a tendency and no more—until the diffusive energy, in ceasing to be exerted, shall leave *it*, the tendency, free to seek its satisfaction. The Divine Act, however, being considered as determinate, and discontinued on fulfilment of the diffusion, we understand, at once, a *reaction*—in other words, a *satisfiable* tendency of the disunited atoms to return into *One*.

But the diffusive energy being withdrawn, and the reaction having commenced in furtherance of the ultimate design—*that of the utmost possible Relation*—this design is now in danger of being frustrated, in detail, by reason of that very tendency to return which is to effect its accomplishment in general. *Multiplicity* is the object; but there is nothing to prevent proximate atoms from lapsing *at once*, through the now satisfiable tendency—*before* the fulfilment of any ends proposed in multiplicity—into absolute oneness among themselves:—there is nothing to impede the aggregation of various *unique* masses, at various points of space:—in other words, nothing to interfere with the accumulation of various masses, each absolutely One.

For the effectual and thorough completion of the general design, we thus see the necessity for a repulsion of limited capacity—a separative *something* which, on withdrawal of the diffusive Volition, shall at the same time allow the approach, and forbid the junction, of the atoms; suffering them infinitely

to approximate, while denying them positive contact; in a word, having the power—*up to a certain epoch*—of preventing their *coalition*, but no ability to interfere with their *coalescence* in any respect *or degree*. The repulsion, already considered as so peculiarly limited in other regards, must be understood, let me repeat, as having power to prevent absolute coalition, *only up to a certain epoch*. Unless we are to conceive that the appetite for Unity among the atoms is doomed to be satisfied *never;*—unless we are to conceive that what had a beginning is to have no end—a conception which cannot *really* be entertained, however much we may talk or dream of entertaining it—we are forced to conclude that the repulsive influence imagined, will, finally—under pressure of the *Uni-tendency collectively* applied, but never and in no degree *until*, on fulfilment of the Divine purposes, such collective application shall be naturally made—yield to a force which, at that ultimate epoch, shall be the superior force precisely to the extent required, and thus permit the universal subsidence into the inevitable, because original and therefore normal, *One*. The conditions here to be reconciled are difficult indeed:—we cannot even comprehend the possibility of their conciliation;—nevertheless, the apparent impossibility is brilliantly suggestive.

That the repulsive something actually exists, *we see*. Man neither employs, nor knows, a force sufficient to bring two atoms into contact. This is but the well-established proposition of the impenetrability of matter. All Experiment proves—all Philosophy admits it. The *design* of the repulsion—the necessity for its existence—I have endeavored to show; but from all attempt at investigating its nature have religiously abstained; this on account of an intuitive conviction that the principle at issue

is strictly spiritual—lies in a recess impervious to our present understanding—lies involved in a consideration of what now—in our human state—is *not* to be considered—in a consideration of *Spirit in itself*. I feel, in a word, that here the God has interposed, and here only, because here and here only the knot demanded the interposition of the God.

In fact, while the tendency of the diffused atoms to return into Unity, will be recognized, at once, as the principle of the Newtonian Gravity, what I have spoken of as a repulsive influence prescribing limits to the (immediate) satisfaction of the tendency will be understood as *that* which we have been in the practice of designating now as heat, now as magnetism, now as *electricity;* displaying our ignorance of its awful character in the vacillation of the phraseology with which we endeavor to circumscribe it.

Calling it, merely for the moment, electricity, we know that all experimental analysis of electricity has given, as an ultimate result, the principle, or seeming principle, *heterogeneity*. *Only* where things differ, is electricity apparent; and it is presumable that they *never* differ where it is not developed at least, if not apparent. Now, this result is in the fullest keeping with that which I have reached unempirically. The design of the repulsive influence I have maintained to be that of preventing immediate Unity among the diffused atoms; and these atoms are represented as different each from each. *Difference* is their character—their essentiality—just as *no-difference* was the essentiality of their course. When we say, then, that an attempt to bring any two of these atoms together would induce an effort, on the part of the repulsive influence, to prevent the

contact, we may as well use the strictly convertible sentence that an attempt to bring together any two differences will result in a development of electricity. All existing bodies, of course, are composed of these atoms in proximate contact, and are therefore to be considered as mere assemblages of more or fewer differences; and the resistance made by the repulsive spirit, on bringing together any two such assemblages, would be in the ratio of the two sums of the differences in each:—an expression which, when reduced, is equivalent to this:—*The amount of electricity developed on the approximation of two bodies, is proportional to the difference between the respective sums of the atoms of which the bodies are composed.* That *no* two bodies are absolutely alike, is a simple corollary from all that has been here said. Electricity, therefore, existing always, is *developed* whenever *any* bodies, but *manifested* only when bodies of appreciable difference, are brought into approximation.

To electricity—so, for the present, continuing to call it—we *may* not be wrong in referring the various physical appearances of light, heat and magnetism; but far less shall we be liable to err in attributing to this strictly spiritual principle the more important phænomena of vitality, consciousness and *Thought.* On this topic, however, I need pause *here* merely to suggest that these phænomena, whether observed generally or in detail, seem to proceed *at least in the ratio of the heterogeneous.*

Discarding now the two equivocal terms, "gravitation" and "electricity," let us adopt the more definite expressions, "*attraction*" and "*repulsion.*" The former is the body; the latter the soul: the one is the material; the other the spiritual, principle of the Universe. *No other principles exist. All* phæ-

nomena are referable to one, or to the other, or to both combined. So rigorously in this the case—so thoroughly demonstrable is it that attraction and repulsion are the *sole* properties through which we perceive the Universe—in other words, by which Matter is manifested to Mind—that, for all merely argumentative purposes, we are fully justified in assuming that matter *exists* only as attraction and repulsion—that attraction and repulsion *are* matter: —there being no conceivable case in which we may not employ the term "matter" and the terms "attraction" and "repulsion," taken together, as equivalent, and therefore convertible, expressions in Logic.

I said, just now, that what I have described as the tendency of the diffused atoms to return into their original unity, would be understood as the principle of the Newtonian law of gravity; and, in fact, there can be but little difficulty in such an understanding, if we look at the Newtonian gravity in a merely general view, as a force impelling matter to seek matter; that is to say, when we pay no attention to the known *modus operandi* of the Newtonian force. The general coincidence satisfies us; but, upon looking closely, we see, in detail, much that appears *in*coincident, and much in regard to which no coincidence, at least, is established. For example: the Newtonian gravity, when we think of it in certain moods, does *not* seem to be a tendency to *oneness* at all, but rather a tendency of all bodies in all directions—a phrase apparently expressive of a tendency to diffusion. Here, then, is an *in*coincidence. Again; when we reflect on the mathematical *law* governing the Newtonian tendency, we see clearly that no coincidence has been made good, in respect of the *modus operandi*, at least, between

gravitation as known to exist and that seemingly simple and direct tendency which I have assumed.

In fact, I have attained a point at which it will be advisable to strengthen my position by reversing my processes. So far, we have gone on *à priori*, from an abstract consideration of *Simplicity*, as that quality most likely to have characterized the original action of God. Let us now see whether the established facts of the Newtonian Gravitation may not afford us, *à posteriori*, some legitimate inductions.

What does the Newtonian law declare? That all bodies attract each other with forces proportional to the squares of their distances. Purposely, I have given, in the first place, the vulgar version of the law; and I confess that in this, as in most other vulgar versions of great truths, we find little of a suggestive character. Let us now adopt a more philosophical phraseology:—*Every atom, of every body, attracts every other atom, both of its own and of every other body, with a force which varies inversely as the squares of the distances between the attracting and attracted atom.* Here, indeed, a flood of suggestion bursts upon the mind.

But let us see distinctly what it was that Newton *proved*—according to the grossly irrational definitions of *proof* prescribed by the metaphysical schools. He was forced to content himself with showing how thoroughly the motions of an imaginary Universe, composed of attracting and attracted atoms obedient to the law he announced, coincide with those of the actually existing Universe so far as it comes under our observation. This was the amount of his *demonstration*—that is to say, this was the amount of it, according to the conventional cant of the "philosophies." His successes added proof multiplied by proof—such proof as a sound

intellect admits—but the *demonstration* of the law itself, persist the metaphysicians, had not been strengthened in any degree. "*Ocular, physical* proof," however, of attraction, here upon Earth, in accordance with the Newtonian theory, was, at length, much to the satisfaction of some intellectual grovellers, afforded. This proof arose collaterally and incidentally (as nearly all important truths have arisen) out of an attempt to ascertain the mean density of the Earth. In the famous Maskelyne, Cavendish and Bailly experiments for this purpose, the attraction of the mass of a mountain was seen, felt, measured, and found to be mathematically consistent with the immortal theory of the British astronomer.

But in spite of this confirmation of that which needed none—in spite of the so-called corroboration of the "theory" by the so-called "ocular and physical proof"—in spite of the *character* of this corroboration—the ideas which even really philosophical men cannot help imbibing of gravity—and, especially, the ideas of it which ordinary men get and contentedly maintain, are *seen* to have been derived, for the most part, from a consideration of the principle as they find it developed—*merely in the planet upon which they stand.*

Now, to what does so partial a consideration tend—to what species of error does it give rise? On the Earth we *see* and *feel*, only that gravity impels all bodies towards the *centre* of the Earth. No man in the common walks of life could be *made* to see or feel anything else—could be made to perceive that anything, anywhere, has a perpetual, gravitating tendency in any *other* direction than to the centre of the Earth; yet (with an exception hereafter to be specified) it is a fact that every earthly

thing (not to speak now of every heavenly thing) has a tendency not *only* to the Earth's centre but in every conceivable direction besides.

Now, although the philosophic cannot be said to *err with* the vulgar in this matter, they nevertheless permit themselves to be influenced, without knowing it, by the *sentiment* of the vulgar idea. "Although the Pagan fables are not believed," says Bryant, in his very erudite "Mythology," yet we forget ourselves continually and make inferences from them as from existing realities." I mean to assert that the merely *sensitive perception* of gravity as we experience it on Earth, beguiles mankind into the fancy of *concentralization* or *especiality* respecting it—has been continually biasing towards this fancy even the mightiest intellects—perpetually, although imperceptibly, leading them away from the real characteristics of the principle; thus preventing them, up to this date, from ever getting a glimpse of that vital truth which lies in a diametrically opposite direction—behind the principle's *essential* characteristics—those, *not* of concentralization or especiality —but of *universality* and *diffusion*. This "vital truth" is *Unity* as the *source* of the phænomenon.

Let me now repeat the definition of gravity:— *Every atom, of every body, attracts every other atom, both of its own and of every other body*, with a force which varies inversely as the squares of the distances of the attracting and attracted atom.

Here let the reader pause with me, for a moment, in contemplation of the miraculous—of the ineffable— of the altogether unimaginable complexity of relation involved in the fact that *each atom attracts every other atom*—involved merely in this fact of the attraction, without reference to the law or mode in which the attraction is manifested—involved

merely in the fact that each atom attracts every other atom *at all*, in a wilderness of atoms so numerous that those which go to the composition of a cannon-ball, exceed, probably, in mere point of number, all the stars which go to the constitution of the Universe.

Had we discovered, simply, that each atom tended to some one favorite point—to some especially attractive atom—we should still have fallen upon a discovery which, in itself, would have sufficed to overwhelm the mind:—but what is it that we are actually called upon to comprehend? That each atom attracts—sympathizes with the most delicate movements of every other atom, and with each and with all at the same time, and forever, and according to a determinate law of which the complexity, even considered by itself solely, is utterly beyond the grasp of the imagination of man. If I propose to ascertain the influence of one mote in a sunbeam upon its neighboring mote, I cannot accomplish my purpose without first counting and weighing all the atoms in the Universe, and defining the precise positions of all at one particular moment. If I venture to displace, by even the billionth part of an inch, the microscopical speck of dust which lies now upon the point of my finger, what is the character of that act upon which I have adventured? I have done a deed which shakes the Moon in her path, which causes the Sun to be no longer the sun, and which alters forever the destiny of the multitudinous myriads of stars that roll and glow in the majestic presence of their Creator.

These ideas—conceptions such as *these*—unthoughtlike thoughts—soul-reveries rather than conclusions or even considerations of the intellect:—ideas, I repeat, such as these, are such as we can

alone hope profitably to ascertain in any effort at grasping the great principle, *Attraction*.

But now, *with* such ideas—with such a *vision* of the marvellous complexity of Attraction fairly in his mind—let any person competent of thought on such topics as these, set himself to the task of imagining a *principle* for the phænomena observed—a condition from which they sprang.

Does not so evident a brotherhood among the atoms point to a common parentage? Does not a sympathy so omniprevalent, so ineradicable, and so thoroughly irrespective, suggest a common paternity as its source? Does not one extreme impel the reason to the other? Does not the infinitude of division refer to the utterness of individuality? Does not the entireness of the complex hint at the perfection of the simple? It is *not* that the atoms, as we see them, are divided or that they are complex in their relations—but that they are inconceivably divided and unutterably complex: it is the extremeness of the conditions to which I now allude, rather than to the conditions themselves. In a word, is it not because the atoms were, at some remote epoch of time, even *more than together*—is it not because originally, and therefore normally, they were *One*—that now, in all circumstances—at all points—in all directions—by all modes of approach—in all relations and through all conditions—they struggle *back* to this absolutely, this irrelatively, this unconditionally *one?*

Some person may here demand:—"Why—since it is to the *One* that the atoms struggle back—do we not find and define Attraction 'a merely general tendency to a center?'—why, in especial, do not *your* atoms—the atoms which you describe as having been irradiated from a centre—proceed at once,

rectilinearly back to the central point of their origin?"

I reply that *they do;* as will be distinctly shown; but that the cause of their so doing is quite irrespective of the centre *as such.* They all tend rectilinearly towards a centre, because of the sphericity with which they have been irradiated into space. Each atom, forming one of a generally uniform globe of atoms, finds more atoms in the direction of the centre, of course, than in any other, and in that direction, therefore, is impelled—but is *not* thus impelled because the centre is *the point of its origin.* It is not to any *point* that the atoms are allied. It is not any *locality,* either in the concrete or in the abstract, to which I suppose them bound. Nothing like *location* was conceived as their origin. Their source lies in the principle, *Unity. This* is their lost parent. *This* they seek always—immediately—in all directions—wherever it is even partially to be found; thus appeasing, in some measure, the ineradicable tendency, while on the way to its absolute satisfaction in the end. It follows from all this, that any principle which shall be adequate to account for the law, or *modus operandi,* of the attractive force in general, will account for this law in particular:—that is to say, any principle which will show why the atoms should tend to their *general centre of irradiation* with forces inversely proportional to the squares of the distances will be admitted as satisfactorily accounting, at the same time, for the tendency according to the same law, of these atoms each to each;—*for* the tendency to the centre *is* merely the tendency each to each, and not any tendency to a centre as such.—Thus it will be seen, also, that the establishment of my propositions would involve no *necessity* of modifica-

tion in the terms of the Newtonian definition of Gravity, which declares that each atom attracts each other atom and so forth, and declares this merely; but (always under the supposition that what I propose be, in the end, admitted) it seems clear that some error might occasionally be avoided, in the future processes of Science, were a more ample phraseology adopted:—for instance:—"Each atom tends to every other atom, &c., with a force, &c.: *the general result being a tendency of all, with a similar force, to a general centre.*"

The reversal of our processes has thus brought us to an identical result; but while in the one process *intuition* was the starting point, in the other it was the goal. In commencing the former journey I could only say that, with an irresistible intuition, I *felt* Simplicity to have been made the characteristic of the original action of God:—in ending the letter I can only declare that with an irresistible intuition, I perceive Unity to have been the source of the observed phænomena of the Newtonian gravitation. Thus, according to the schools, I *prove* nothing. So be it:—I design but to suggest—and to *convince* through the suggestion. I am proudly aware that there exist many of the most profound and cautiously discriminative human intellects which cannot *help* being abundantly content with my—suggestions. To these intellects—as to my own—there is no mathematical demonstration which *could* bring the least additional *true proof* of the great *Truth* which I have advanced—*the truth of Original Unity as the source—as the principle of the Universal Phænomena.* For my part I am not sure that I speak and see—I am not so sure that my heart beats and that my soul lives:—of the rising of to-morrow's sun—a probability that as yet lies in the Future—I do not pretend to

be one thousandth part as sure—as I am of the irretrievably bygone *Fact* that All Things and All Thoughts of Things, with all their ineffable Multiplicity of Relation, sprang at once into being from the primordial and irrelative *One*.

Referring to the Newtonian Gravity, Dr. Nichol, the eloquent author of "The Architecture of the Heavens," says:—"In truth we have no reason to suppose this great Law, as now revealed, to be the ultimate or simplest, and therefore the universal and all-comprehensive, form of a great Ordinance. The mode in which its intensity diminishes with the element of distance, has not the aspect of an ultimate *principle;* which always assumes the simplicity and self-evidence of those axioms which constitute the basis of Geometry."

Now, it is quite true that "ultimate principles," in the common understanding of the words, always assume the simplicity of geometrical axioms—(as for "self-evidence," there is no such thing)—but these principles are clearly *not* "ultimate;" in other terms, what we are in the habit of calling principles are no principles, properly speaking—since there can be but one *principle*, the Volition of God. We have no right to assume, then, from what we observe in rules that we choose foolishly to name "principles," anything at all in respect to the characteristics of a principle proper. The "ultimate principles" of which Dr. Nichol speaks as having geometrical simplicity, may and do have this geometrical turn, as being part and parcel of a vast geometrical system, and thus a system of simplicity itself—in which, nevertheless, the *truly* ultimate principle is, *as we know*, the consummation of the complex—that is to say, of the unintelligible—for is it not the Spiritual Capacity of God?

I quoted Dr. Nichol's remark, however, not so much to question its philosophy, as by way of calling attention to the fact that while all men have admitted *some* principle as existing behind the law of Gravity, no attempt has been yet made to point out what this principle in particular *is*:—if we except, perhaps, occasional fantastic efforts at referring it to Magnetism, or Mesmerism, or Swedenborgianism, or Transcendentalism, or some other equally delicious *ism* of the same species, and invariably patronized by one and the same species of people. The great mind of Newton, while boldly grasping the Law itself, shrank from the principle of the Law. The more fluent and comprehensive at least, if not the more patient and profound, sagacity of Laplace, had not the courage to attack it. But hesitation on the part of these two astronomers it is, perhaps, not so very difficult to understand. They, as well as all the first class of mathematicians, were mathematicians *solely*:—their intellect at least had a firmly-pronounced mathematico-physical tone. What lay not distinctly within the domain of Physics, or of Mathematics, seemed to them either Non-Entity or Shadow. Nevertheless, we may well wonder that Leibnitz, who was a marked exception to the general rule in these respects, and whose mental temperament was a singular admixture of the mathematical with the physico-metaphysical, did not at once investigate and establish the point at issue. Either Newton or Laplace, seeking a principle and discovering none *physical*, would have rested contentedly in the conclusion that there was absolutely none; but it is almost impossible to fancy of Liebnitz, that, having exhausted in his search the physical dominions, he would not have stepped at once, boldly and hopefully, amid his old familiar

haunts in the kingdom of Metaphysics. Here, indeed, it is clear that he *must* have adventured in search of the treasure:—that he did not find it after all, was, perhaps, because his fairy guide, Imagination, was not sufficiently well-grown, or well-educated, to direct him aright.

I observed, just now, that, in fact, there had been certain vague attempts at referring Gravity to some very uncertain *isms*. These attempts, however, although considered bold, and justly so considered, looked no farther than to the generality—the merest generality—of the Newtonian Law. Its *modus operandi* has never, to my knowledge, been approached in the way of an effort at explanation. It is therefore, with no unwarranted fear of being taken for a madman at the outset, and before I can bring my propositions fairly to the eye of those who alone are competent to decide upon them, that I here declare the *modus operandi* of the Law of Gravity to be an exceedingly simple and perfectly explicable thing—that is to say, when we make our advances towards it in just gradations and in the true direction—when we regard it from the proper point of view.

Whether we reach the idea of absolute *Unity* as the source of All Things, from a consideration of Simplicity as the most probable characteristic of the original action of God;—whether we arrive at it from an inspection of the universality of relation in the gravitating phænomena;—or whether we attain it as a result of the mutual corroboration afforded by both processes;—still, the idea itself, if entertained at all, is entertained in inseparable connection with another idea—that of the condition of the Universe of stars as we *now* perceive it—that is to say, a condition of immeasurable *diffusion* through space.

Now a connection between these two ideas—unity and diffusion—cannot be established unless through the entertainment of a third idea—that of *irradiation*. Absolute Unity being taken as a centre, then the existing Universe of stars is the result of *irradiation* from that centre.

Now, the laws of irradiation are *known*. They are part and parcel of the *sphere*. They belong to the class of *indisputable geometrical properties*. We say of them, "they are true—they are evident." To demand *why* they are true, would be to demand why the axioms are true upon which their demonstration is based. *Nothing* is demonstrable, strictly speaking; but *if* anything *be*, then the properties—the laws in question are demonstrated.

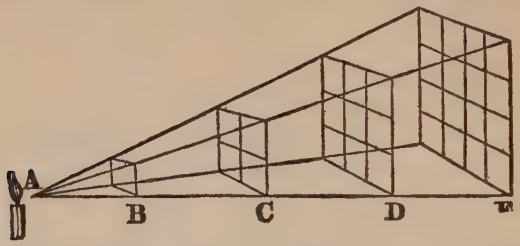
But these laws—what do they declare? Irradiation—how—by what steps does it proceed outwardly from a centre?

From a *luminous* centre, *Light* issues by irradiation; and the quantities of light received upon any given plane, supposed to be shifting its position so as to be now nearer the centre and now further from it, will be diminished in the same proportion as the squares of the distances of the plane from the luminous body, are increased; and will be increased in the same proportion as these squares are diminished.

The expression of the law may be thus generalized: —the number of light-particles (or, if the phrase be preferred, the number of light-impressions) received upon the shifting plane, will be *inversely* proportional with the squares of the distances of the plane. Generalizing yet again, we may say that the diffusion—the scattering—the irradiation, in a word—is *directly* proportional with the squares of the distances.

For example: at the distance B, from the luminous

centre A, a certain number of particles are so diffused as to occupy the surface B. Then at double the distance—that is to say, at C—they will be so much farther diffused as to occupy four such surfaces:



—at treble the distance, or at D, they will be so much farther separated as to occupy nine such surfaces;—while, at quadruple the distance, or at E, they will have become so scattered as to spread themselves over sixteen such surfaces—and so on forever.

In saying, generally, that the irradiation proceeds in direct proportion with the squares of the distances, we use the term irradiation to express *the degree of the diffusion* as we proceed outwardly from the centre. Conversing the idea, and employing the word "concentralization," to express *the degree of the drawing together* as we come back toward the centre from an outward position, we may say that concentralization proceeds *inversely* as the squares of the distances. In other words, we have reached the conclusion that, on the hypothesis that matter was originally irradiated from a centre, and is now returning to it, the concentralization, in the return, proceeds *exactly as we know the force of gravitation to proceed.*

Now here, if we could be permitted to assume that concentralization exactly represented the *force of the tendency to the centre*—that the one was exactly proportional to the other, and that the two proceeded together—we should have shown all that is required.

The sole difficulty existing, then, is to establish a direct proportion between "concentralization" and the *force* of concentralization; and this is done, of course, if we establish such proportion between "irradiation" and the *force* of irradiation.

A very slight inspection of the Heavens assures us that the stars have a certain general uniformity, equability, or equidistance, of distribution through that region of space in which, collectively, and in a roughly globular form, they are situated:—this species of very general, rather than absolute, equability, being in full keeping with my deduction of inequidistance, within certain limits, among the originally diffused atoms, as a corollary from the evident design of infinite complexity of relation out of irrelation. I started, it will be remembered, with the idea of a generally uniform but particularly *un*uniform distribution of the atoms;—an idea, I repeat, which an inspection of the stars, as they exist, confirms.

But even in the merely general equability of distribution, as regards the atoms, there appears a difficulty which, no doubt, has already suggested itself to those among my readers who have borne in mind that I suppose this equability of distribution effected through *irradiation from a centre*. The very first glance at the idea, irradiation, forces us to the entertainment of the hitherto unseparated and seemingly inseparable idea of agglomeration about a centre, with dispersion as we recede from it—the idea, in a word, of *in*equability of distribution in respect to the matter irradiated.

Now, I have elsewhere* observed, that it is by just such difficulties as the one now in question—such roughnesses—such peculiarities—such protuberances above the plane of the ordinary—that

*"*Murders in the Rue Morgue*"—p. 23, Vol. II.

Reason feels her way, if at all, in her search for the True. By the difficulty—the "peculiarity"—now presented, I leap at once to *the* secret—a secret which I might never have attained *but* for the peculiarity and the inferences which, *in its mere character of peculiarity*, it affords me.

The process of thought, at this point, may be thus roughly sketched:—I say to myself—"Unity, as I have explained it, is a truth—I feel it. Diffusion is a truth—I see it. Irradiation, by which alone these two truths are reconciled, is a consequent truth—I perceive it. *Equability* of diffusion, first deduced *à priori* and then corroborated by the inspection of phænomena, is also a truth—I fully admit it. So far all is clear around me:—there are no clouds behind which *the* secret—the great secret of the gravitating *modus operandi*—can possibly lie hidden;—but this secret lies *hereabouts*, most assuredly; and *were* there but a cloud in view, I should be driven to suspicion of that cloud." And now, just as I say this, there actually comes a cloud into view. This cloud is the seeming impossibility of reconciling my truth, *irradiation*, with my truth, *equability of diffusion*. I say now:—"Behind this *seeming* impossibility is to be found what I desire." I do not say "*real* impossibility;" for invincible faith in my truths assures me that it is a mere difficulty after all; but I go on to say, with unflinching confidence, that, *when* this *difficulty* shall be solved, we shall find, *wrapped up in the process of solution*, the key to the secret at which we aim. Moreover—I *feel* that we shall discover *but one* possible solution of the difficulty; this for the reason that, were there two, one would be supererogatory—would be fruitless—would be empty—would contain no key—since no duplicate key can be needed to any secret of Nature.

And now, let us see:—Our usual notions of irradiation—in fact, *all* our distinct notions of it—are caught merely from the process as we see it exemplified in *Light*. Here there is a *continuous* outpouring of *ray-streams*, and *with a force which we have at least no right to suppose varies at all*. Now, in any such irradiation *as this*—continuous and of unvarying force—the regions nearer the centre must *inevitably* be always more crowded with the irradiated matter than the regions more remote. But I have assumed *no* such irradiation *as this*. I assumed no *continuous* irradiation; and for the simple reason that such an assumption would have involved, first, the necessity of entertaining a conception which I have shown no man *can* entertain, and which (as I will more fully explain hereafter) all observation of the firmament refutes—the conception of the absolute infinity of the Universe of stars—and would have involved, secondly, the impossibility of understanding a reaction—that is, gravitation—as existing now—since, while an act is continued, no reaction, of course, can take place. My assumption, then, or rather my inevitable deduction from just premises,—was that of a *determinate* irradiation—one finally *dis*continued.

Let me now describe the sole possible mode in which it is conceivable that matter could have been diffused through space, so as to fulfil the conditions at once of irradiation and of generally equable distribution.

For convenience of illustration, let us imagine, in the first place, a hollow sphere of glass, or of anything else, occupying the space throughout which the universal matter is to be thus equally diffused, by means of irradiation, from the absolute, irrelative, unconditional particle, placed in the centre of the sphere.

Now, a certain exertion of the diffusive power (presumed to be the Divine Volition)—in other words, a certain *force*—whose measure is the quantity of matter—that is to say, the number of atoms—emitted; emits, by irradiation, this certain number of atoms; forcing them in all directions outwardly from the centre—their proximity to each other diminishing as they proceed—until, finally, they are distributed, loosely, over the interior surface of the sphere.

When these atoms have attained this position, or while proceeding to attain it, a second and inferior exercise of the same force—or a second and inferior force of the same character—emits, in the same manner—that is to say, by irradiation as before—a second stratum of atoms which proceeds to deposit itself upon the first; the number of atoms, in this case as in the former, being of course the measure of the force which emitted them; in other words, the force being precisely adapted to the purpose it effects—the force, and the number of atoms sent out by the force, being *directly proportional.*

When this second stratum has reached its destined position—or while approaching it—a third still inferior exertion of the force, or a third inferior force of a similar character—the number of atoms emitted being in *all* cases the measure of the force—proceeds to deposit a third stratum upon the second: —and so on, until these concentric strata, growing gradually less and less, come down at length to the central point; and the diffusive matter, simultaneously with the diffusive force, is exhausted.

We have now the sphere filled, through means of irradiation, with atoms equably diffused. The two necessary conditions—those of irradiation and of equable diffusion—are satisfied; and by the *sole* process in which the possibility of their simultaneous

satisfaction is conceivable. For this reason, I confidently expect to find, lurking in the present condition of the atoms as distributed throughout the sphere, the secret of which I am in search—the all-important principle of the *modus operandi* of the Newtonian law. Let us examine, then, the actual condition of the atoms.

They lie in a series of concentric strata. They are equably diffused throughout the sphere. They have been irradiated into these states.

The atoms being *equably* distributed, the greater the superficial extent of any of these concentric strata, or spheres, the more atoms will lie upon it. In other words, the number of atoms lying upon the surface of any one of the concentric spheres, is directly proportional with the extent of that surface.

*But, in any series of concentric spheres, the surfaces are directly proportional with the squares of the distances from the centre.**

Therefore the number of atoms in any stratum is directly proportional with the square of that stratum's distance from the centre.

But the number of atoms in any stratum is the measure of the force which emitted that stratum—that is to say, is *directly proportional* with the force.

Therefore the force which irradiated any stratum is directly proportional with the square of that stratum's distance from the centre:—or, generally,

The force of the irradiation has been directly proportional with the squares of the distances.

Now, Reaction, as far as we know any thing of it, is Action conversed. The *general* principle of Gravity being, in the first place, understood as the reaction of an act—as the expression of a desire on

* Succinctly—The surfaces of spheres are as the squares of their radii.

the part of Matter, while existing in a state of diffusion, to return into the Unity whence it was diffused; and, in the second place, the mind being called upon to determine the *character* of the desire—the manner in which it would, naturally, be manifested; in other words, being called upon to conceive a probable law, or *modus operandi*, for the return; could not well help arriving at the conclusion that this law of return would be precisely the converse of the law of departure. That such would be the case, any one, at least, would be abundantly justified in taking for granted, until such time as some person should suggest something like a plausible reason why it should *not* be the case—until such period as a law of return shall be imagined which the intellect can consider as preferable.

Matter, then, irradiated into space with a force varying as the squares of the distances, might *à priori*, be supposed to return towards its centre of irradiation with a force varying *inversely* as the squares of the distances: and I have already shown* that any principle which will explain why the atoms should tend, according to any law, to the general centre, must be admitted as satisfactorily explaining, at the same time, why, according to the same law, they should tend each to each. For, in fact, the tendency to the general centre is not to a centre as such, but because of its being a point in tending towards which each atom tends most directly to its real and essential centre, *Unity*—the absolute and final Union of all.

The consideration here involved presents to my own mind no embarrassment whatever—but this fact does not blind me to the possibility of its being obscure to those who may have been less in the

* Page 277, Vol. I.

habit of dealing with abstractions:—and, upon the whole, it may be as well to look at the matter from one or two other points of view.

The absolute, irrelative particle primarily created by the Volition of God, must have been in a condition of positive *normality*, or rightfulness—for wrongfulness implies *relation*. Right is positive; wrong is negative—is merely the negation of right; as cold is the negation of heat—darkness of light. That a thing may be wrong, it is necessary that there be some other thing in *relation* to which it *is* wrong—some condition which it fails to satisfy; some law which it violates; some being whom it aggrieves. If there be no such being, law, or condition, in respect to which the thing is wrong—and, still more especially, if no beings, laws, or conditions exist at all—then the thing can*not* be wrong, and consequently must be *right*. Any deviation from normality involves a tendency to return to it. A difference from the normal—from the right—from the just—can be understood as effected only by the overcoming a difficulty; and if the force which overcomes the difficulty be not infinitely continued, the ineradicable tendency to return will at length be permitted to act for its own satisfaction. Upon withdrawal of the force, the tendency acts. This is the principle of reaction as the inevitable consequence of finite action. Employing a phraseology of which the seeming affectation will be pardoned for its expressiveness, we may say that Reaction is the return from the condition of *as it is and ought not to be* into the condition of *as it was, originally, and therefore ought to be*:—and let me add here that the *absolute* force of Reaction would no doubt be always found in direct proportion with the reality—the truth—the absoluteness—of the *originality*—

if ever it were possible to measure this latter:—and, consequently, the greatest of all conceivable reactions must be that produced by the tendency which we now discuss—the tendency to return into the *absolutely original*—into the *supremely* primitive. Gravity, then, *must be the strongest of forces*—an idea reached *à priori* and abundantly confirmed by induction. What use I make of the idea, will be seen in the sequel.

The atoms, now, having been diffused from their normal condition of Unity, seek to return to——what? Not to any particular *point*, certainly; for it is clear that if, upon the diffusion, the whole Universe of matter had been projected, collectively, to a distance from the point of irradiation, the atomic tendency to the general centre of the sphere would not have been disturbed in the least:—the atoms would not have sought the point *in absolute space* from which they were originally impelled. It is merely the *condition*, and not the point or locality at which this condition took its rise, that these atoms seek to re-establish;—it is merely *that condition which is their normality*, that they desire. "But they seek a centre," it will be said, "and a centre is a point." True; but they seek this point not in its character of point—(for, were the whole sphere moved from its position, they would seek, equally, the centre; and the centre *then* would be a *new* point) —but because it so happens, on account of the form in which they collectively exist—(that of the sphere)—that only *through* the point in question—the sphere's centre—they can attain their true object, Unity. In the direction of the centre each atom perceives more atoms than in any other direction. Each atom is impelled towards the centre because along the straight line joining it and the centre and passing on to the circumference

beyond, there lie a greater number of atoms than along any other straight line—a greater number of objects that seek it, the individual atom—a greater number of tendencies to Unity—a greater number of satisfactions for its own tendency to Unity—in a word, because in the direction of the centre lies the utmost possibility of satisfaction, generally, for its own individual appetite. To be brief, the *condition*, Unity, is all that is really sought; and if the atoms *seem* to seek the centre of the sphere, it is only impliedly, through implication—because such centre happens to imply, to include, or to involve, the only essential centre, Unity. But *on account of* this implication or involution, there is no possibility of practically separating the tendency to Unity in the abstract, from the tendency to the concrete centre. Thus the tendency of the atoms to the general centre *is*, to all practical intents and for all logical purposes, the tendency each to each; and the tendency each to each *is* the tendency to the centre; and the one tendency may be assumed *as* the other; whatever will apply to the one must be thoroughly applicable to the other; and, in conclusion, whatever principle will satisfactorily explain the one, cannot be questioned as an explanation of the other.

In looking carefully around me for a rational objection to what I have advanced, I am able to discover *nothing;*—but of that class of objections usually urged by the doubters for Doubt's sake, I very readily perceive *three;* and proceed to dispose of them in order.

It may be said, first: "That the proof that the force of irradiation (in the case described) is directly proportional to the squares of the distances, depends upon an unwarranted assumption—that of the

number of atoms in each stratum being the measure of the force with which they are emitted."

I reply, not only that I am warranted in such assumption, but that I should be utterly *un*warranted in any other. What I assume is, simply, that an effect is the measure of its cause—that every exercise of the Divine Will will be proportional to that which demands the exertion—that the means of Omnipotence, or of Omniscience, will be exactly adapted to its purposes. Neither can a deficiency nor an excess of cause bring to pass any effect. Had the force which irradiated any stratum to its position, been either more or less than was needed for the purpose—that is to say, not *directly proportional* to the purpose—then to its position that stratum could not have been irradiated. Had the force which, with a view to general equability of distribution, emitted the proper number of atoms for each stratum, been not *directly proportional* to the number, then the number would *not* have been the number demanded for the equable distribution.

The second supposable objection is somewhat better entitled to an answer.

It is an admitted principle in Dynamics that every body, on receiving an impulse, or disposition to move, will move onward in a straight line, in the direction imparted by the impelling force, until deflected, or stopped, by some other force. How then, it may be asked, is my first or external stratum of atoms to be understood as discontinuing their movement at the circumference of the imaginary glass sphere, when no second force, of more than an imaginary character, appears, to account for the discontinuance?

I reply that the objection, in this case, actually does arise out of "an unwarranted assumption"—on

the part of the objector—the assumption of a principle, in Dynamics, at an epoch when *no* "principles," in *anything*, exist:—I use the word "principle," of course, in the objector's understanding of the word.

"In the beginning" we can admit—indeed we can comprehend—but one *First Cause*—the truly ultimate *Principle*—the Volition of God. The primary *act*—that of Irradiation from Unity—must have been independent of all that which the world now calls "principle"—because all that we so designate is but a consequence of the reaction of that primary act:—I say "*primary*" act; for the creation of the absolute material particle is more properly to be regarded as a *conception* than as an "*act*" in the ordinary meaning of the term. Thus, we must regard the primary act as an act for the establishment of what we now call "principles." But this primary act itself is to be considered as *continuous Volition*. The Thought of God is to be understood as originating the Diffusion—as proceeding with it—as regulating it—and, finally, as being withdrawn from it upon its completion. *Then* commences Reaction, and through Reaction, "Principle," as we employ the word. It will be advisable, however, to limit the application of this word to the two *immediate* results of the discontinuance of the Divine Volition—that is, to the two agents, *Attraction* and *Repulsion*. Every other Natural agent depends, either more or less immediately, upon these two, and therefore would be more conveniently designated as *sub*-principle.

It may be objected, thirdly, that, in general, the peculiar mode of distribution which I have suggested for the atoms, is "an hypothesis and nothing more."

Now, I am aware that the word hypothesis is a ponderous sledge-hammer, grasped immediately,

if not lifted, by all very diminutive thinkers, upon the first appearance of any proposition wearing, in any particular, the garb of *a theory*. But "hypothesis" cannot be wielded *here* to any good purpose, even by those who succeed in lifting it—little men or great.

I maintain, first, that *only* in the mode described is it conceivable that Matter could have been diffused so as to fulfil at once the conditions of irradiation and of generally equable distribution. I maintain, secondly, that these conditions themselves have been imposed upon me, as necessities, in a train of ratiocination *as rigorously logical as that which establishes any demonstration in Euclid;* and I maintain, thirdly, that even if the charge of "hypothesis" were as fully sustained as it is, in fact, unsustained and untenable, still the validity and indisputability of my result would not, even in the slightest particular, be disturbed.

To explain:—The Newtonian Gravity—a law of Nature—a law whose existence as such no one out of Bedlam questions—a law whose admission as such enables us to account for nine-tenths of the Universal phænomena—a law which, merely because it does so enable us to account for these phænomena, we are perfectly willing, without reference to any other considerations, to admit, and cannot help admitting, as a law—a law, nevertheless, of which neither the principle nor the *modus operandi* of the principle, has ever yet been traced by the human analysis—a law, in short, which, neither in its detail nor in its generality, has been found susceptible of explanation *at all*—is at length seen to be at every point thoroughly explicable, provided we only yield our assent to——what? To an hypothesis? Why *if* an hypothesis—if the merest hypothesis—if an hypothesis for whose assumption—as in the

case of that *pure* hypothesis the Newtonian law itself—no shadow of *à priori* reason could be assigned—if an hypothesis, even so absolute as all this implies, would enable us to perceive a principle for the Newtonian law—would enable us to understand as satisfied, conditions so miraculously—so ineffably complex and seemingly irreconcileable as those involved in the relations of which Gravity tells us,—what rational being *could* so expose his fatuity as to call even this absolute hypothesis an hypothesis any longer—unless, indeed, he were to persist in so calling it, with the understanding that he did so, simply for the sake of consistency *in words?*

But what is the true state of our present case? What is *the fact?* Not only that is *not* an hypothesis which we are required *to adopt*, in order to admit the principle at issue explained, but that it *is* a logical conclusion which we are requested *not* to adopt if we can avoid it—which we are simply invited to *deny if we can:*—a conclusion of so accurate a logicality that to dispute it would be the effort—to doubt its validity, beyond our power:—a conclusion from which we see no mode of escape, turn as we will; a result which confronts us either at the end of an *in*ductive journey from the phænomena of the very Law discussed, or at the close of a *de*ductive career from the most rigorously simple of all conceivable assumptions—*the assumption, in a word, of Simplicity itself.*

And if here, for the mere sake of cavilling, it be urged, that although my starting-point is, as I assert, the assumption of absolute Simplicity, yet Simplicity, considered merely in itself, is no axiom; and that only deductions from axioms are indisputable—it is thus that I reply:—

Every other science than Logic is the science of certain concrete relations. Arithmetic, for example,

is the science of the relations of number—Geometry, of the relations of form—Mathematics in general, of the relations of quantity in general—of whatever can be increased or diminished. Logic, however, is the science of Relation in the abstract—of absolute Relation—of Relation considered solely in itself. An axiom in any particular science other than Logic is, thus, merely a proposition announcing certain concrete relations which seem to be too obvious for dispute—as when we say, for instance, that the whole is greater than its part;—and, thus again, the principle of the *Logical* axiom—in other words, of an axiom in the abstract—is, simply, *obviousness of relation*. Now, it is clear, not only that what is obvious to one mind may not be obvious to another, but that what is obvious to one mind at one epoch, may be anything but obvious, at another epoch, to the same mind. It is clear, moreover, that what, to-day, is obvious even to the majority of mankind, or to the majority of the best intellects of mankind, may to-morrow be, to either majority, more or less obvious, or in no respect obvious at all. It is seen, then, that the *axiomatic principle* itself is susceptible of variation, and of course that axioms are susceptible of similar change. Being mutable, the "truths" which grow out of them are necessarily mutable too; or, in other words, are never to be positively depended upon as truths at all—since Truth and Immutability are one.

It will now be readily understood that no axiomatic idea—no idea founded in the fluctuating principle, obviousness of relation—can possibly be so secure—so reliable a basis for any structure erected by the Reason, as *that* idea—(whatever it is, wherever we can find it, or *if* it be practicable to find it anywhere)—which is *ir*relative altogether—which

not only presents to the understanding *no obviousness* of relation, either greater or less, to be considered, but subjects the intellect, not in the slightest degree, to the necessity of even looking at *any relation at all.* If such an idea be not what we too heedlessly term "an axiom," it is at least preferable, as a Logical basis, to any axiom ever propounded, or to all imaginable axioms combined:—and such, precisely, is the idea with which my deductive process, so thoroughly corroborated by induction, commences. My *particle proper* is but *absolute Irrelation.* To sum up what has been advanced:—As a starting point I have taken it for granted, simply, that the Beginning had nothing behind it or before it—that it was a Beginning in fact—that it was a beginning and nothing different from a beginning—in short, that this Beginning was *—that which it was.* If this be a "mere assumption" then a "mere assumption" let it be.

To conclude this branch of the subject:—I am fully warranted in announcing that *the Law which we have been in the habit of calling Gravity exists on account of Matter's having been irradiated, at its origin, atomically, into a limited* sphere of Space, from one, individual, unconditional, irrelative, and absolute Particle Proper, by the sole process in which it was possible to satisfy, at the same time, the two conditions, irradiation, and generally-equable distribution throughout the sphere—that is to say, by a force varying in direct proportion with the squares of the distances between the irradiated atoms, respectively, and the Particular centre of Irradiation.*

I have already given my reasons for presuming Matter to have been diffused by a determinate

* "Limited sphere"—A sphere is *necessarily* limited. I prefer tautology to a chance of misconception.

rather than by a continuous or infinitely continued force. Supposing a continuous force, we should be unable, in the first place, to comprehend a reaction at all; and we should be required, in the second place, to entertain the impossible conception of an infinite extension of Matter. Not to dwell upon the impossibility of the conception, the infinite extension of Matter is an idea which, if not positively disproved, is at least not in any respect warranted by telescopic observation of the stars—a point to be explained more fully hereafter; and this empirical reason for believing in the original finity of Matter is unempirically confirmed. For example:—Admitting, for the moment, the possibility of understanding Space *filled* with the irradiated atoms—that is to say, admitting, as well as we can, for argument's sake, that the succession of the irradiated atoms had absolutely *no end*—then it is abundantly clear that, even when the Volition of God had been withdrawn from them, and thus the tendency to return into Unity permitted (abstractly) to be satisfied, this permission would have been nugatory and invalid—practically valueless and of no effect whatever. No Reaction could have taken place; no movement toward Unity could have been made; no Law of Gravity could have obtained.

To explain:—Grant the *abstract* tendency of any one atom to any one other as the inevitable result of diffusion from the normal Unity:—or, what is the same thing, admit any given atom as *proposing* to move in any given direction—it is clear that, since there is an *infinity* of atoms on all sides of the atom proposing to move, it never can actually move toward the satisfaction of its tendency in the direction given, on account of a precisely equal and counter-balancing tendency in the direction dia-

metrically opposite. In other words, exactly as many tendencies to Unity are behind the hesitating atom as before it; for it is a mere sotticism to say that one infinite line is longer or shorter than another infinite line, or that one infinite number is greater or less than another number that is infinite. Thus the atom in question must remain stationary forever. Under the impossible circumstances which we have been merely endeavoring to conceive for argument's sake, there could have been no aggregation of Matter—no stars—no worlds—nothing but a perpetually atomic and inconsequential Universe. In fact, view it as we will, the whole idea of unlimited Matter is not only untenable, but impossible and preposterous.

With the understanding of a *sphere* of atoms, however, we perceive, at once, a *satisfiable* tendency to union. The general result of the tendency each to each, being a tendency of all to the centre, the *general* process of condensation, or approximation, commences immediately, by a common and simultaneous movement, on withdrawal of the Divine Volition; the *individual* approximations, or coalescences—*not* coalitions—of atom with atom, being subject to almost infinite variations of time, degree, and condition, on account of the excessive multiplicity of relation, arising from the differences of form assumed as characterizing the atoms at the moment of their quitting the Particle Proper; as well as from the subsequent particular inequidistance, each from each.

What I wish to impress upon the reader is the certainty of there arising, at once, (on withdrawal of the diffusive force, or Divine Volition,) out of the condition of the atoms as described, at innumerable points throughout the Universal sphere, innumer-

able agglomerations, characterized by innumerable specific differences of form, size, essential nature, and distance each from each. The development of Repulsion (Electricity) must have commenced, of course, with the very earliest particular efforts at Unity, and must have proceeded constantly in the ratio of Coalescence—that is to say, *in that of Condensation*, or, again, of Heterogeneity.

Thus the two Principles Proper, *Attraction* and *Repulsion*—the Material and the Spiritual—accompany each other, in the strictest fellowship, forever. Thus *The Body and The Soul walk hand in hand.*

If now, in fancy, we select *any one* of the agglomerations considered as in their primary stages throughout the Universal sphere, and suppose this incipient agglomeration to be taking place at that point where the centre of our Sun exists—or rather where it *did* exist originally; for the Sun is perpetually shifting his position—we shall find ourselves met, and borne onward for a time at least, by the most magnificent of theories—by the Nebular Cosmogony of Laplace:—although "Cosmogony" is far too comprehensive a term for what he really discusses—which is the constitution of our solar system alone—of one among the myriad of similar systems which make up the Universe Proper—that Universal sphere—that all-inclusive and absolute *Kosmos* which forms the subject of my present Discourse.

Confining himself to an *obviously limited* region—that of our solar system with its comparatively immediate vicinity—and *merely* assuming—that is to say, assuming without any basis whatever, either deductive or inductive—*much* of what I have been just endeavoring to place upon a more stable basis than assumption; assuming, for example, matter

as diffused (without pretending to account for the diffusion) throughout, and somewhat beyond, the space occupied by our system—diffused in a state of heterogeneous nebulosity and obedient to that omniprevalent law of Gravity at whose principle he ventured to make no guess; assuming all this (which is quite true, although he had no logical right to its assumption) Laplace has shown, dynamically and mathematically, that the results in such case necessarily ensuing, are those and those alone which we find manifested in the actually existing condition of the system itself.

To explain:—Let us conceive *that* particular agglomeration of which we have just spoken—the one at the point designated by our Sun's centre—to have so far proceeded that a vast quantity of nebulous matter has here assumed a roughly globular form; its centre being, of course, coincident with what is now, or rather was originally, the centre of our Sun; and its periphery extending out beyond the orbit of Neptune, the most remote of our planets:—in other words, let us suppose the diameter of this rough sphere to be some 6000 millions of miles. For ages, this mass of matter has been undergoing condensation, until at length it has become reduced into the bulk we imagine; having proceeded gradually, of course, from its atomic and imperceptible state, into what we understand of visible, palpable, or otherwise appreciable nebulosity.

Now, the condition of this mass implies a rotation about an imaginary axis—a rotation which, commencing with the absolute incipiency of the aggregation, has been ever since acquiring velocity. The very first two atoms which met, approaching each other from points not diametrically opposite, would, in rushing partially past each other, form a nucleus

for the rotary movement described. How this would increase in velocity, is readily seen. The two atoms are joined by others:—an aggregation is formed. The mass continues to rotate while condensing. But any atom at the circumference has, of course, a more rapid motion than one nearer the centre. The outer atom, however, with its superior velocity, approaches the centre; carrying this superior velocity with it as it goes. Thus every atom, proceeding inwardly, and finally attaching itself to the condensed centre, adds something to the original velocity of that centre—that is to say, increases the rotary movement of the mass.

Let us now suppose this mass so far condensed that it occupies *precisely* the space circumscribed by the orbit of Neptune, and that the velocity with which the surface of the mass moves, in the general rotation, is precisely that velocity with which Neptune now revolves about the Sun. At this epoch, then, we are to understand that the constantly increasing centrifugal force, having gotten the better of the non-increasing centripetal, loosened and separated the exterior and least condensed stratum, or a few of the exterior and least condensed strata, at the equator of the sphere, where the tangential velocity predominated; so that these strata formed about the main body an independent ring encircling the equatorial regions:—just as the exterior portion thrown off by excessive velocity of rotation, from a grindstone, would form a ring about the grindstone, but for the solidity of the superficial material: were this caoutchouc, or anything similar in consistency precisely the phænomenon I describe would be presented.

The ring thus whirled from the nebulous mass, *revolved*, of course, *as* a separate ring, with just that

velocity with which, while the surface of the mass, it *rotated*. In the meantime, condensation still proceeding, the interval between the discharged ring and the main body continued to increase, until the former was left at a vast distance from the latter.

Now, admitting the ring to have possessed, by some seemingly accidental arrangement of its heterogeneous materials, a constitution nearly uniform, then this ring, *as* such, would never have ceased revolving about its primary; but, as might have been anticipated, there appears to have been enough irregularity in the disposition of the materials, to make them cluster about centres of superior solidity; and thus the annular form was destroyed.* No doubt, the band was soon broken up into several portions, and one of these portions, predominating in mass, absorbed the others into itself; the whole settling, spherically, into a planet. That this latter, *as* a planet, continued the revolutionary movement which characterized it while a ring, is sufficiently clear; and that it took upon itself, also, an additional movement in its new condition of sphere, is readily explained. The ring being understood as yet unbroken, we see that its exterior, while the whole revolves about the parent body, moves more rapidly than its interior. When the rupture occurred, then, some portion in each fragment must have been moving with greater velocity than the others. The superior movement prevailing, must have whirled each fragment round—that is to say, have caused it to rotate; and the direction

* Laplace assumed his nebulosity heterogeneous, merely that he might be thus enabled to account for the breaking up of the rings; for had the nebulosity been homogeneous, they would not have broken. I reach the same result—heterogeneity of the secondary masses immediately resulting from the atoms—purely from an *à priori* consideration of their general design—*Relation*.

of the rotation must, of course, have been the direction of the revolution whence it arose. *All* the fragments having become subject to the rotation described, must, in coalescing, have imparted it to the one planet constituted by their coalescence.—This planet was Neptune. Its material continuing to undergo condensation, and the centrifugal force generated in its rotation, getting, at length, the better of the centripetal, as before in the case of the parent orb, a ring was whirled also from the equatorial surface of this planet: this ring, having been uniform in its constitution, was broken up, and its several fragments, being absorbed by the most massive, were collectively spherified into a moon. Subsequently, the operation was repeated, and a second moon was the result. We thus account for the planet Neptune, with the two satellites which accompany him.

In throwing off a ring from its equator, the Sun re-established that equilibrium between its centripetal and centrifugal forces which had been disturbed in the process of condensation; but, as this condensation still proceeded, the equilibrium was again immediately disturbed, through the increase of rotation. By the time the mass had so far shrunk that it occupied a spherical space just that circumscribed by the orbit of Uranus, we are to understand that the centrifugal force had so far obtained the ascendency that new relief was needed: a second equatorial band was, consequently, thrown off, which, proving ununiform, was broken up, as before in the case of Neptune; the fragments settling into the planet Uranus; the velocity of whose actual revolution about the Sun indicates, of course, the rotary speed of that Sun's equatorial surface at the moment of the separation. Uranus, adopting a

rotation from the collective rotations of the fragments composing it, as previously explained, now threw off ring after ring; each of which, becoming broken up, settled into a moon:—three moons, at different epochs, having been formed, in this manner, by the rupture and general spherification of as many distinct ununiform rings.

By the time the Sun had shrunk until it occupied a space just that circumscribed by the orbit of Saturn, the balance, we are to suppose, between its centripetal and centrifugal forces had again become so far disturbed, through increase of rotary velocity, the result of condensation, that a third effort at equilibrium became necessary; and an annular band was therefore whirled off, as twice before; which, on rupture through ununiformity, became consolidated into the planet Saturn. This latter threw off, in the first place, seven uniform bands, which, on rupture, were spherified respectively into as many moons; but, subsequently, it appears to have discharged, at three distinct but not very distant epochs, three rings whose equability of constitution was, by apparent accident, so considerable as to present no occasion for their rupture; thus they continue to revolve as rings. I use the phrase "*apparent* accident;" for of accident in the ordinary sense there was, of course, nothing:—the term is properly applied only to the result of indistinguishable or not immediate traceable *law*.

Shrinking still farther, until it occupied just the space circumscribed by the orbit of Jupiter, the Sun now found need of farther effort to restore the counterbalance of its two forces, continually disarranged in the still continued increase of rotation. Jupiter, accordingly, was now thrown off; passing from the annular to the planetary condition; and, on attain-

ing this latter, threw off in its turn, at four different epochs, four rings, which finally resolved themselves into so many moons.

Still shrinking, until its sphere occupied just the space defined by the orbit of the Asteroids, the Sun now discarded a ring which appears to have had *eight* centres of superior solidity, and, on breaking up, to have separated into eight fragments, no one of which so far predominated in mass as to absorb the others. All therefore, as distinct although comparatively small planets, proceeded to revolve in orbits whose distances, each from each, may be considered as in some degree the measure of the force which drove them asunder:—all the orbits, nevertheless, being so closely coincident as to admit of our calling them *one*, in view of the other planetary orbits.

Continuing to shrink, the Sun, on becoming so small as just to fill the orbit of Mars, now discharged this planet—of course by the process repeatedly described. Having no moon, however, Mars could have thrown off no ring. In fact, an epoch had now arrived in the career of the parent body, the centre of the system. The *de*crease of its nebulosity, which is the *in*crease of its density, and which again is the *de*crease of its condensation, out of which latter arose the constant disturbance of equilibrium—must, by this period, have attained a point at which the efforts for restoration would have been more and more ineffectual just in proportion as they were less frequently needed. Thus the processes of which we have been speaking would everywhere show signs of exhaustion—in the planets, first, and secondly, in the original mass. We must not fall into the error of supposing the decrease of interval observed among the planets as we approach

the Sun, to be in any respect indicative of an increase of frequency in the periods at which they were discarded. Exactly the converse is to be understood. The longest interval of time must have occurred between the discharges of the two interior; the shortest, between those of the two exterior, planets. The decrease of the interval of space is, nevertheless, the measure of the density, and thus inversely of the condensation, of the Sun, throughout the processes detailed.

Having shrunk, however, so far as to fill only the orbit of our Earth, the parent sphere whirled from itself still one other body—the Earth—in a condition so nebulous as to admit of this body's discarding, in its turn, yet another, which is our Moon;—but here terminated the lunar formations.

Finally, subsiding to the orbits first of Venus and then of Mercury, the Sun discarded these two interior planets; neither of which has given birth to any moon.

Thus from his original bulk—or, to speak more accurately, from the condition in which we first considered him—from a partially spherified nebular mass, *certainly* much more than 5,600 millions of miles in diameter—the great central orb and origin of our solar-planetary-lunar system, has gradually descended, by condensation, in obedience to the law of Gravity, to a globe only 882,000 miles in diameter; but it by no means follows, either that its condensation is yet complete, or that it may not still possess the capacity of whirling from itself another planet.

I have here given—in outline of course, but still with all the detail necessary for distinctness—a view of the Nebular Theory as its author himself conceived it. From whatever point we regard it,

we shall find it *beautifully true*. It is by far too beautiful, indeed, *not* to possess Truth as its essentiality—and here I am very profoundly serious in what I say. In the revolution of the satellites of Uranus, there does appear something seemingly inconsistent with the assumptions of Laplace; but that *one* inconsistency can invalidate a theory constructed from a million of intricate consistencies, is a fancy fit only for the fantastic. In prophesying, confidently, that the apparent anomaly to which I refer, will, sooner or later, be found one of the strongest possible corroborations of the general hypothesis, I pretend to no especial spirit of divination. It is a matter which the only difficulty seems *not* to foresee.*

The bodies whirled off in the processes described, would exchange, it has been seen, the superficial *rotation* of the orbs whence they originated, for a *revolution* of equal velocity about these orbs as distant centres; and the revolution thus engendered must proceed, so long as the centripetal force, or that with which the discarded body gravitates toward its parent, is neither greater nor less than that by which it was discarded; that is, than the centrifugal, or, far more properly, than the tangential, velocity. From the unity, however, of the origin of these two forces, we might have expected to find them as they are found—the one accurately counterbalancing the other. It has been shown, indeed, that the act of whirling-off is, in every case, merely an act for the preservation of the counterbalance.

After referring, however, the centripetal force

* I am prepared to show that the anomalous revolution of the satellites of Uranus is a simply perspective anomaly arising from the inclination of the axis of the planet.

to the omniprevalent law of Gravity, it has been the fashion with astronomical treatises, to seek beyond the limits of mere Nature—that is to say, of *Secondary* Cause—a solution of the phænomenon of tangential velocity. This latter they attribute directly to a *First* Cause—to God. The force which carries a stellar body around its primary they assert to have originated in an impulse given immediately by the finger—this is the childish phraseology employed—by the finger of Deity itself. In this view, the planets, fully formed, are conceived to have been hurled from the Divine hand, to a position in the vicinity of the suns, with an impetus mathematically adapted to the masses, or attractive capacities, of the suns themselves. An idea so grossly unphilosophical, although so supinely adopted, could have arisen only from the difficulty of otherwise accounting for the absolutely accurate adaptation, each to each, of two forces so seemingly independent, one of the other, as are the gravitating and tangential. But it should be remembered that, for a long time, the coincidence between the moon's rotation and her sidereal revolution—two matters seemingly far more independent than those now considered—was looked upon as positively miraculous; and there was a strong disposition, even among astronomers, to attribute the marvel to the direct and continual agency of God—who, in this case, it was said, had found it necessary to interpose, specially, among his general laws, a set of subsidiary regulations, for the purpose of forever concealing from mortal eyes the glories, or perhaps the horrors, of the other side of the Moon—of that mysterious hemisphere which has always avoided, and must perpetually avoid, the telescopic scrutiny of mankind. The advance of Science, however,

soon demonstrated—what to the philosophical instinct needed *no* demonstration—that the one movement is but a portion—something more, even, than a consequence—of the other.

For my part, I have no patience with fantasies at once so timorous, so idle, and so awkward. They belong to the veriest *cowardice* of thought. That Nature and the God of Nature are distinct, no thinking being can long doubt. By the former we imply merely the laws of the latter. But with the very idea of God, omnipotent, omniscient, we entertain, also, the idea of *the infallibility* of his laws. With Him there being neither Past nor Future—with Him all being *Now*—do we not insult him in supposing his laws so contrived as not to provide for every possible contingency?—or, rather, what idea *can* we have of *any* possible contingency, except that it is at once a result and a manifestation of his laws? He who, divesting himself of prejudice, shall have the rare courage to think absolutely for himself, cannot fail to arrive, in the end, at the condensation of *laws* into *Law*—cannot fail of reaching the conclusion that *each law of Nature is dependent at all points upon all other laws*, and that all are but consequences of one primary exercise of the Divine Volition. Such is the principle of the Cosmogony which, with all necessary deference, I here venture to suggest and to maintain.

In this view, it will be seen that, dismissing as frivolous, and even impious, the fancy of the tangential force having been imparted to the planets immediately by "the finger of God," I consider this force as originating in the rotation of the stars:—this rotation as brought about by the in-rushing of the primary atoms, towards their respective centres of aggregation:—this in-rushing as the con-

sequence of the law of Gravity:—this law as but the mode in which is necessarily manifested the tendency of the atoms to return into imparticularity:—this tendency to return as but the inevitable reaction of the first and most sublime of Acts—that act by which a God, self-existing and alone existing, became all things at once, through dint of his volition, while all things were thus constituted a portion of God.

The radical assumptions of this Discourse suggest to me, and in fact imply, certain important *modifications* of the Nebular Theory as given by Laplace. The efforts of the repulsive power I have considered as made for the purpose of preventing contact among the atoms, and thus as made in the ratio of the approach to contact—that is to say, in the ratio of condensation.* In other words, *Electricity*, with its involute phænomena, heat, light and magnetism, is to be understood as proceeding as condensation proceeds, and, of course, inversely, as destiny proceeds, or the *cessation to condense*. Thus the Sun, in the process of its aggregation, must soon, in developing repulsion, have become excessively heated—perhaps incandescent: and we can perceive how the operation of discarding its rings must have been materially assisted by the slight incrustation of its surface consequent on cooling. Any common experiment shows us how readily a crust of the character suggested, is separated, through heterogeneity, from the interior mass. But, on every successive rejection of the crust, the new surface would appear incandescent as before; and the period at which it would again become so far incrusted as to be readily loosened and discharged, may well be imagined as exactly

* See page 191.

coincident with that at which a new effort would be needed, by the whole mass, to restore the equilibrium of its two forces, disarranged through condensation. In other words:—by the time the electric influence (Repulsion) has prepared the surface for rejection, we are to understand that the gravitating influence (Attraction) is precisely ready to reject it. Here, then, as everywhere, *the Body and the Soul walk hand in hand.*

These ideas are empirically confirmed at all points. Since condensation can never, in any body, be considered as absolutely at an end, we are warranted in anticipating that, whenever we have an opportunity of testing the matter, we shall find indications of resident luminosity in *all* the stellar bodies—moons and planets as well as suns. That our Moon is strongly self-luminous, we see at every total eclipse, when, if not so, she would disappear. On the dark part of the satellite, too, during her phases, we often observe flashes like our own Auroras; and that these latter, with our various other so-called electrical phænomena, without reference to any more steady radiance, must give our Earth a certain appearance of luminosity to an inhabitant of the Moon, is quite evident. In fact, we should regard all the phænomena referred to, as mere mainfestations, in different moods and degrees, of the Earth's feebly-continued condensation.

If my views are tenable, we should be prepared to find the newer planets—that is to say, those nearer the Sun—more luminous than those older and more remote:—and the extreme brilliancy of Venus (on whose dark portions, during her phases, the Auroras are frequently visible) does not seem to be altogether accounted for by her mere proximitv to the central orb. She is no doubt vividly

self-luminous, although less so than Mercury: while the luminosity of Neptune may be comparatively nothing.

Admitting what I have urged, it is clear that, from the moment of the Sun's discarding a ring, there must be a continuous diminution both of his heat and light, on account of the continuous incrustation of his surface; and that a period would arrive—the period immediately previous to a new discharge—when a *very material* decrease of both light and heat, must become apparent. Now, we know that tokens of such changes are distinctly recognisable. On the Melville islands—to adduce merely one out of a hundred examples—we find traces of *ultra-tropical* vegetation—of plants that never could have flourished without immensely more light and heat than are at present afforded by our Sun to any portion of the surface of the Earth. Is such vegetation referable to an epoch immediately subsequent to the whirling-off of Venus? At this epoch must have occurred to us our greatest access of solar influence; and, in fact, this influence must then have attained its maximum:—leaving out of view, of course, the period when the Earth itself was discarded—the period of its mere organization.

Again:—we know that there exist *non-luminous suns*—that is to say, suns whose existence we determine through the movements of others, but whose luminosity is not sufficient to impress us. Are these suns invisible merely on account of the length of time elapsed since their discharge of a planet? And yet again:—may we not—at least in certain cases—account for the sudden appearances of suns where none had been previously suspected, by the hypothesis that, having rolled with incrusted surfaces throughout the few thousand years of our

astronomical history, each of these suns, in whirling off a new secondary, has at length been enabled to display the glories of its still incandescent interior?—To the well-ascertained fact of the proportional increase of heat as we descend into the Earth, I need of course, do nothing more than refer:—it comes in the strongest possible corroboration of all that I have said on the topic now at issue.

In speaking, not long ago, of the repulsive or electrical influence, I remarked that "the important phænomena of vitality, consciousness, and thought, whether we observe them generally or in detail, seem to proceed *at least in the ratio of the heterogeneous.*"* I mentioned, too, that I would recur to the suggestion:—and this is the proper point at which to do so. Looking at the matter, first, in detail, we perceive that not merely the *manifestation* of vitality, but its importance, consequences, and elevation of character, keep pace, very closely, with the heterogeneity, or complexity, of the animal structure. Looking at the question, now, in its generality, and referring to the first movements of the atoms towards mass-constitution, we find that heterogeneousness, brought about directly through condensation, is proportional with it forever. We thus reach the proposition that *the importance of the development of the terrestrial vitality proceeds equably with the terrestrial condensation.*

Now this is in precise accordance with what we know of the succession of animals on the Earth. As it has proceeded in its condensation, superior and still superior races have appeared. Is it impossible that the successive geological revolutions which have attended, at least, if not immediately caused, these successive elevations of vitalic charac-

* Page 159.

ter—is it improbable that these revolutions have themselves been produced by the successive planetary discharges from the Sun—in other words, by the successive variations in the solar influence on the Earth? Were this idea tenable, we should not be unwarranted in the fancy that the discharge of yet a new planet, interior to Mercury, may give rise to yet a new modification of the terrestrial surface—a modification from which may spring a race both materially and spiritually superior to Man. These thoughts impress me with all the force of truth—but I throw them out, of course, merely in their obvious character of suggestion.

The Nebular Theory of Laplace has lately received far more confirmation than it needed, at the hands of the philosopher, Compte. These two have thus together shown—*not*, to be sure, that Matter at any period actually existed as described, in a state of nebular diffusion, but that, admitting it so to have existed throughout the space and much beyond the space now occupied by our solar system, *and to have commenced a movement towards a centre*—it must gradually have assumed the various forms and motions which are now seen, in that system, to obtain. A demonstration such as this—a dynamical and mathematical demonstration, as far as demonstration can be—unquestionable and unquestioned—unless, indeed, by that unprofitable and disreputable tribe, the professional questioners—the mere madmen who deny the Newtonian law of Gravity on which the results of the French mathematicians are based—a demonstration, I say, such as this, would to most intellects be conclusive—and I confess that it is so to mine—of the validity of the nebular hypothesis upon which the demonstration depends.

That the demonstration does not *prove* the hy-

pothesis, according to the common understanding of the word "proof," I admit, of course. To show that certain existing results—that certain established facts—may be, even mathematically, accounted for by the assumption of a certain hypothesis, is by no means to establish the hypothesis itself. In other words:—to show that, certain data being given, a certain existing result might, or even *must*, have ensued, will fail to prove that this result *did* ensue, *from the data*, until such time as it shall be also shown that there are, *and can be*, no other data from which the result in question might *equally* have ensued. But, in the case now discussed, although all must admit the deficiency of what we are in the habit of terming "proof," still there are many intellects, and those of the loftiest order, to which *no* proof could bring one iota of additional *conviction*. Without going into details which might impinge upon the Cloud-Land of Metaphysics, I may as well here observe, that the force of conviction, in cases such as this, will always, with the right-thinking, be proportional to the amount of *complexity* intervening between the hypothesis and the result. To be less abstract:—The greatness of the complexity found existing among cosmical conditions, by rendering great in the same proportion the difficulty of accounting for all these conditions, *at once*, strengthens, also in the same proportion, our faith in that hypothesis which does, in such manner, satisfactorily account for them:—and as *no* complexity can well be conceived greater than that of the astronomical conditions, so no conviction can be stronger —to *my* mind at least—than that with which I am impressed by an hypothesis that not only reconciles these conditions, with mathematical accuracy, and reduces them into a consistent and intelligible

whole, but is, at the same time, the *sole* hypothesis by means of which the human intellect has been ever enabled to account for them *at all*.

A most unfounded opinion has been latterly current in gossiping and even in scientific circles—the opinion that the so-called Nebular Cosmogony has been overthrown. This fancy has arisen from the report of late observations made, among what hitherto have been termed the "nebulæ," through the large telescope of Cincinnati, and the world-renowned instrument of Lord Rosse. Certain spots in the firmament which presented, even to the most powerful of the old telescopes, the appearance of nebulosity, or haze, had been regarded for a long time as confirming the theory of Laplace. They were looked upon as stars in that very process of condensation which I have been attempting to describe. Thus it was supposed that we "had ocular evidence"—an evidence, by the way, which has always been found very questionable—of the truth of the hypothesis; and, although certain telescopic improvements, every now and then, enabled us to perceive that a spot, here and there, which we had been classing among the nebulæ, was, in fact, but a cluster of stars deriving its nebular character only from its immensity of distance—still it was thought that no doubt could exist as to the actual nebulosity of numerous other masses, the strong-holds of the nebulists, bidding defiance to every effort at segregation. Of these latter the most interesting was the great "nebulæ" in the constellation Orion:—but this, with innumerable other miscalled "nebulæ," when viewed through the magnificent modern telescopes, has become resolved into a simple collection of stars. Now this fact has been very generally understood as con-

clusive against the Nebular Hypothesis of Laplace; and, on announcement of the discoveries in question, the most enthusiastic defender and most eloquent popularizer of the theory, Dr. Nichol, went so far as to "admit the necessity of abandoning" an idea which had formed the material of his most praiseworthy book.*

Many of my readers will no doubt be inclined to say that the result of these new investigations *has* at least a strong *tendency* to overthrow the hypothesis; while some of them, more thoughtful, will suggest that, although the theory is by no means disproved through the segregation of the particular "nebulæ" alluded to, still a *failure* to segregate them, with such telescopes, might well have been understood as a triumphant *corroboration* of the theory: and this latter class will be surprised, perhaps, to hear me say that even with *them* I disagree. If the propositions of this Discourse have been comprehended, it will be seen that, in my view, a failure to segregate the "nebulæ" would have tended to the refutation, rather than to the confirmation, of the Nebular Hypothesis.

Let me explain:—The Newtonian Law of Gravity we may, of course, assume as demonstrated. This law, it will be remembered, I have referred to the reaction of the first Divine Act—to the reaction of an exercise of the Divine Volition temporarily overcoming a difficulty. This difficulty is that of forc-

*"*Views of the Architecture of the Heavens.*" A letter, purporting to be from Dr. Nichol to a friend in America, went the rounds of our newspapers, about two years ago, I think, admitting "the necessity" to which I refer. In a subsequent Lecture, however, Dr. N. appears in some manner to have gotten the better of the necessity, and does not quite *renounce* the theory, although he seems to wish that he could sneer at it as "a purely hypothetical one." What else was the Law of Gravity before the Maskelyne experiments? and who questioned the Law of Gravity, even then?

ing the normal into the abnormal—of impelling that whose originality, and therefore whose rightful condition, was *One*, to take upon itself the wrongful condition of *Many*. It is only by conceiving this difficulty as *temporarily* overcome, that we can comprehend a reaction. There could have been no reaction had the act been infinitely continued. So long as the act *lasted*, no reaction, of course, could commence; in other words, no *gravitation* could take place—for we have considered the one as but the manifestation of the other. But gravitation *has* taken place; therefore the act of Creation has ceased: and gravitation has long ago taken place; therefore the act of Creation has long ago ceased. We can no more expect, then, to observe *the primary processes* of Creation; and to those primary processes the condition of nebulosity has already been explained to belong.

Through what we know of the propagation of light, we have direct proof that the more remote of the stars have existed, under the forms in which we now see them, for an inconceivable number of years. So far back *at least*, then, as the period when these stars underwent condensation, must have been the epoch at which the mass-constitutive processes began. That we may conceive these processes, then, as still going on in the case of certain "nebulæ," while in all other cases we find them thoroughly at an end, we are forced into assumptions for which we have really *no* basis whatever—we have to thrust in, again, upon the revolting Reason, the blasphemous idea, of special interposition—we have to supose that, in the particular instances of these "nebulæ," an unerring God found it necessary to introduce certain supplementary regulations —certain improvements of the general law—certain

re-touchings and emendations, in a word, which had the effect of deferring the completion of these individual stars for centuries of centuries beyond the æra during which all the other stellar bodies had time, not only to be fully constituted, but to grow hoary with an unspeakable old age.

Of course, it will be immediately objected that since the light by which we recognise the nebulæ now, must be merely that which left their surfaces a vast number of years ago, the processes at present observed, or supposed to be observed, are, in fact, *not* processes now actually going on, but the phantoms of processes completed long in the Past—just as I maintain all these mass-constitutive processes *must* have been.

To this I reply that neither is the now-observed condition of the condensed stars their actual condition, but a condition completed long in the Past; so that my argument drawn from the *relative* condition of the stars and the "nebulæ," is in no manner disturbed. Moreover, those who maintain the existence of nebulæ, do *not* refer the nebulosity to extreme distance; they declare it a real and not merely a perspective nebulosity. That we may conceive, indeed, a nebular mass as visible at all, we must conceive it as *very near us* in comparison with the condensed stars brought into view by the modern telescopes. In maintaining the appearances in question, then, to be really nebulous, we maintain their comparative vicinity to our point of view. Thus, their condition, as we see them now, must be referred to an epoch *far less remote* than that to which we may refer the now-observed condition of at least the majority of the stars.—In a word, should Astronomy ever demonstrate a "nebula," in the sense at present intended, I should

consider the Nebular Cosmogony—*not*, indeed, as corroborated by the demonstration—but as thereby irretrievably overthrown.

By way, however, of rendering unto Cæsar *no more* than the things that are Cæsar's, let me here remark that the assumption of the hypothesis which led him to so glorious a result, seems to have been suggested to Laplace in great measure by a misconception—by the very misconception of which we have just been speaking—by the generally prevalent misunderstanding of the character of the nebulæ, so mis-named. These he supposed to be, in reality, what their designation implies. The fact is, this great man had, very properly, an inferior faith in his own merely *perceptive* powers. In respect, therefore, to the actual existence of nebulæ—an existence so confidently maintained by his telescopic contemporaries—he depended less upon what he saw than upon what he heard.

It will be seen that the only valid objections to his theory, are those made to its hypothesis *as* such —to what suggested it—not to what it suggests; to its propositions rather than to its results. His most unwarranted assumption was that of giving the atoms a movement towards a centre, in the very face of his evident understanding that these atoms, in unlimited succession, extended throughout the Universal space. I have already shown that, under such circumstances, there could have occurred no movement at all; and Laplace, consequently, assumed one on no more philosophical ground than that something of the kind was necessary for the establishment of what he intended to establish.

His original idea seems to have been a compound of the true Epicurean atoms with the false nebulæ

of his contemporaries; and thus his theory presents us with the singular anomaly of absolute truth deduced, as a mathematical result, from a hybrid datum of ancient imagination intertangled with modern inacumen. Laplace's real strength lay, in fact, in an almost miraculous mathematical instinct:—on this he relied; and in no instance did it fail or deceive him:—in the case of the Nebular Cosmogony, it led him, blindfolded, through a labyrinth of Error, into one of the most luminous and stupendous temples of Truth.

Let us now fancy, for the moment, that the ring first thrown off by the Sun—that is to say, the ring whose breaking-up constituted Neptune—did not, in fact, break up until the throwing-off of the ring out of which Uranus arose; that this latter ring, again, remained perfect until the discharge of that out of which sprang Saturn; that this latter, again, remained entire until the discharge of that from which originated Jupiter—and so on. Let us imagine, in a word, that no dissolution occurred among the rings until the final rejection of that which gave birth to Mercury. We thus paint to the eye of the mind a series of coexistent concentric circles; and looking as well at *them* as at the processes by which, according to Laplace's hypothesis, they were constructed, we perceive at once a very singular analogy with the atomic strata and the process of the original irradiation as I have described it. Is it impossible that, on measuring the *forces*, respectively, by which each successive planetary circle was thrown off—that is to say, on measuring the successive excesses of rotation over gravitation which occasioned the successive discharges—we should find the analogy in question more decidedly confirmed? *Is it improbable that*

we should discover these forces to have varied—as in the original radiation—proportionally to the squares of the distances?

Our solar system, consisting, in chief, of one sun, with sixteen planets certainly, and possibly a few more, revolving about it at various distances, and attended by seventeen moons assuredly, but *very* probably by several others—is now to be considered as *an example* of the innumerable agglomerations which proceeded to take place throughout the Universal Sphere of atoms on withdrawal of the Divine Volition. I mean to say that our solar system is to be understood as affording a *generic instance* of these agglomerations, or, more correctly, of the ulterior conditions at which they arrived. If we keep our attention fixed on the idea of *the utmost possible Relation* as the Omnipotent design, and on the precautions taken to accomplish it through difference of form, among the original atoms, and particular inequidistance, we shall find it impossible to suppose for a moment that even any two of the incipient agglomerations reached precisely the same result in the end. We shall rather be inclined to think that *no two* stellar bodies in the Universe—whether suns, planets or moons—are particularly, while *all* are generally, similar. Still less, then, can we imagine any two *assemblages* of such bodies —any two "systems"—as having more than a general resemblance.* Our telescopes, at this point, thoroughly confirm our deductions. Taking our own solar system, then, as merely a loose or general

* It is not *impossible* that some unlooked-for optical improvement may disclose to us, among innumerable varieties of systems, a luminous sun, encircled by luminous and non-luminous rings, within and without and between which, revolve luminous and non-luminous planets, attended by moons having moons—and even these latter again having moons.

type of all, we have so far proceeded in our subject as to survey the Universe under the aspect of a spherical space, throughout which, dispersed with merely general equability, exist a number of but generally similar *systems*.

Let us now, expanding our conceptions, look upon each of these systems as in itself an atom; which in fact it is, when we consider it as but one of the countless myriads of systems which constitute the Universe. Regarding all, then, as but colossal atoms, each with the same ineradicable tendency to Unity which characterizes the actual atoms of which it consists—we enter at once upon a new order of aggregations. The smaller systems, in the vicinity of a larger one, would, inevitably, be drawn into still closer vicinity. A thousand would assemble here; a million there—perhaps here, again, even a billion—leaving, thus, immeasurable vacancies in space. And if, now, it be demanded why, in the case of these systems—of these merely Titanic atoms—I speak, simply, of an "assemblage," and not, as in the case of the actual atoms, of a more or less consolidated agglomeration:—if it be asked, for instance, why I do not carry what I suggest to its legitimate conclusion, and describe, at once, these assemblages of system-atoms as rushing to consolidation in spheres—as each becoming condensed into one magnificent sun—my reply is that *μελλοντα ταυτα*—I am but pausing, for a moment, on the awful threshold of *the Future*. For the present, calling these assemblages "clusters," we see them in the incipient stages of their consolidation. Their *absolute* consolidation is *to come*.

We have now reached a point from which we behold the Universe as a spherical space, interspersed, *unequably*, with *clusters*. It will be noticed

that I here prefer the adverb "unequably" to the phrase "with a merely general equability," employed before. It is evident, in fact, that the equability of distribution will diminish in the ratio of the agglomerative processes—that is to say, as the things distributed diminish in number. Thus the increase of *in*equability—an increase which must continue until, sooner or later, an epoch will arrive at which the largest agglomeration will absorb all the others—should be viewed as, simply, a corroborative indication of the *tendency to One*.

And here, at length, it seems proper to inquire whether the ascertained *facts* of Astronomy confirm the general arrangement which I have thus, deductively, assigned to the Heavens. Thoroughly, they *do*. Telescopic observation, guided by the laws of perspective, enables us to understand that the perceptible Universe exists as *a cluster of clusters, irregularly disposed.*

The "clusters" of which this Universal "*cluster of clusters*" consists, are merely what we have been in the practice of designating "nebulæ"—and, of these "nebulæ," *one* is of paramount interest to mankind. I allude to the Galaxy, or Milky Way. This interests us, first and most obviously, on account of its great superiority in apparent size, not only to any one other cluster in the firmament, but to all the other clusters taken together. The largest of these latter occupies a mere point, comparatively, and is distinctly seen only with the aid of a telescope. The Galaxy sweeps throughout the Heaven and is brilliantly visible to the naked eye. But it interests man chiefly, although less immediately, on account of its being his home; the home of the Earth on which he exists; the home of the Sun about which this Earth revolves; the home of that "system" of

orbs of which the Sun is the centre and primary—the Earth one of sixteen secondaries, or planets—the Moon one of seventeen tertiaries, or satellites. The Galaxy, let me repeat, is but one of the *clusters* which I have been describing—but one of the miscalled "nebulæ" revealed to us—by the telescope alone, sometimes—as faint hazy spots in various quarters of the sky. We have no reason to suppose the Milky Way *really* more extensive than the least of these "nebulæ." Its vast superiority in size is but an apparent superiority arising from our position in regard to it—that is to say, from our position in its midst. However strange the assertion may at first appear to those unversed in Astronomy, still the astronomer himself has no hesitation in asserting that we are *in the midst* of that inconceivable host of stars—of suns—of systems—which constitute the Galaxy. Moreover, not only have *we*—not only has *our* Sun a right to claim the Galaxy as its own especial cluster, but, with slight reservation, it may be said that all the distinctly visible stars of the firmament—all the stars visible to the naked eye—have equally a right to claim it as *their* own.

There has been a great deal of misconception in respect to the *shape* of the Galaxy; which, in nearly all our astronomical treatises, is said to resemble that of a capital Y. The cluster in question has, in reality, a certain general—*very* general resemblance to the planet Saturn, with its encompassing triple ring. Instead of the solid orb of that planet, however, we must picture to ourselves a lenticular star-island, or collection of stars; our Sun lying excentrically—near the shore of the island—on that side of it which is nearest the constellation of the Cross and farthest from that of Cassiopeia. The surrounding ring, where it approaches our position,

has in it a longitudinal *gash*, which does, in fact, cause *the ring, in our vicinity*, to assume, loosely, the appearance of a capital Y.

We must not fall into the error, however, of conceiving the somewhat indefinite girdle as at all *remote*, comparatively speaking, from the also indefinite lenticular cluster which it surrounds; and thus, for mere purpose of explanation, we may speak of our Sun as actually situated at that point of the Y where its three component lines unite; and, conceiving this letter to be of a certain solidity—of a certain thickness, very trivial in comparison with its length—we may even speak of our position as *in the middle* of this thickness. Fancying ourselves thus placed, we shall no longer find difficulty in accounting for the phænomena presented—which are perspective altogether. When we look upward or downward—that is so say, when we cast our eyes in the direction of the letter's *thickness*—we look through fewer stars than when we cast them in the direction of its *length*, or *along* either of the three component lines. Of course, in the former case, the stars appear scattered—in the latter, crowded.—To reverse this explanation:—An inhabitant of the Earth, when looking, as we commonly express ourselves, *at* the Galaxy, is then beholding it in some of the directions of its length—is looking *along* the lines of the Y—but when, looking out into the general Heaven, he turns his eyes *from* the Galaxy, he is then surveying it in the direction of the letter's thickness; and on this account the stars seem to him scattered; while, in fact, they are as close together, on an average, as in the mass of the cluster. *No* consideration could be better adapted to convey an idea of this cluster's stupendous extent.

If, with a telescope of high space-penetrating

power, we carefully inspect the firmament, we shall become aware of *a belt of clusters*—of what we have hitherto called "nebulæ"—a *band*, of varying breadth, stretching from horizon to horizon, at right angles to the general course of the Milky Way. This band is the ultimate *cluster of clusters*. This belt is *The Universe*. Our Galaxy is but one, and perhaps one of the most inconsiderable, of the clusters which go to the constitution of this ultimate, Universal *belt* or *band*. The appearance of this cluster of clusters, to our eyes, *as* a belt or band, is altogether a perspective phænomenon of the same character as that which causes us to behold our own individual and roughly-spherical cluster, the Galaxy, under guise also of a belt, traversing the Heavens at right angles to the Universal one. The shape of the all-inclusive cluster is, of course *generally*, that of each individual cluster which it includes. Just as the scattered stars which, on looking *from* the Galaxy, we see in the general sky are, in fact, but a portion of that Galaxy itself, and as closely intermingled with it as any of the telescopic points in what seems the densest portion of its mass—so are the scattered "nebulæ" which, on casting our eyes *from* the Universal *belt*, we perceive at all points of the firmament—so, I say, are these scattered "nebulæ" to be understood as only perspectively scattered, and as part and parcel of the one supreme and Universal *sphere*.

No astronomical fallacy is more untenable, and none has been more pertinaciously adhered to, than that of the absolute *illimitation* of the Universe of Stars. The reasons for limitation, as I have already assigned them, *à priori*, seem to me unanswerable; but, not to speak of these, *observation* assures us that there is, in numerous directions around us,

certainly, if not in all, a positive limit—or, at the very least, affords us no basis whatever for thinking otherwise. Were the succession of stars endless, then the background of the sky would present us an uniform luminosity, like that displayed by the Galaxy—*since there could be absolutely no point, in all that background, at which would not exist a star.* The only mode, therefore, in which, under such a state of affairs, we could comprehend the *voids* which our telescopes find in innumerable directions, would be by supposing the distance of the invisible background so immense that no ray from it has yet been able to reach us at all. That this *may* be so, who shall venture to deny? I maintain, simply, that we have not even the shadow of a reason for believing that it *is* so.

When speaking of the vulgar propensity to regard all bodies on the Earth as tending merely to the Earth's centre, I observed that, "with certain exceptions to be specified hereafter, every body on the Earth tended not only to the Earth's centre, but in every conceivable direction besides."* The "exceptions" refer to those frequent gaps in the Heavens, where our utmost scrutiny can detect not only no stellar bodies, but no indications of their existence:—where yawning chasms, blacker than Erebus, seem to afford us glimpses, through the boundary walls of the Universe of Stars, into the illimitable Universe of Vacancy, beyond. Now as any body, existing on the Earth, chances to pass, either through its own movement or the Earth's, into a line with any one of these voids, or cosmical abysses, it clearly is no longer attracted *in the direction of that void*, and for the moment, consequently, is "heavier" than at any period, either after or before. In-

* Page 182.

dependently of the consideration of these voids, however, and looking only at the generally unequable distribution of the stars, we see that the absolute tendency of bodies on the Earth to the Earth's centre, is in a state of perpetual variation.

We comprehend, then, the insulation of our Universe. We perceive the isolation of *that*—of *all* that which we grasp with the senses. We know that there exists one *cluster of clusters*—a collection around which, on all sides, extend the immeasurable wildernesses of a Space *to all human perception* untenanted. But *because* upon the confines of this Universe of Stars we are compelled to pause, through want of farther evidence from the senses, is it right to conclude that, in fact, there *is* no material point beyond that which we have thus been permitted to attain? Have we, or have we not, an analogical right to the inference that this perceptible Universe —that this cluster of clusters—is but one of *a series* of clusters of clusters, the rest of which are invisible through distance—through the diffusion of their light being so excessive, ere it reaches us, as not to produce upon our retinas a light-impression—or from there being no such emanation as light at all, in these unspeakably distant worlds—or, lastly, from the mere interval being so vast, that the electric tidings of their presence in Space, have not yet—through the lapsing myriads of years—been enabled to traverse that interval?

Have we any right to inferences—have we any ground whatever for visions such as these? If we have a right to them in *any* degree, we have a right to their infinite extension.

The human brain has obviously a leaning to the "*Infinite*," and fondles the phantom of the idea. It seems to long with a passionate fervor for this im-

possible conception, with the hope of intellectually believing it when conceived. What is general among the whole race of Man, of course no individual of that race can be warranted in considering abnormal; nevertheless, there *may* be a class of superior intelligences, to whom the human bias alluded to may wear all the character of monomania.

My question, however, remains unanswered:—Have we any right to infer—let us say, rather, to imagine—an interminable succession of the "clusters of clusters," or of "Universes" more or less similar?

I reply that the "right," in a case such as this, depends absolutely upon the hardihood of that imagination which ventures to claim the right. Let me declare, only, that, as an individual, I myself feel impelled to *fancy*—without daring to call it more—that there *does* exist a *limitless* succession of Universes, more or less similar to that of which we have cognizance—to that of which *alone* we shall ever have cognizance—at the very least until the return of our own particular Universe into Unity. *If* such clusters of clusters exist, however—*and they do*—it is abundantly clear that, having had no part in our origin, they have no portion in our laws. They neither attract us, nor we them. Their material—their spirit is not ours—is not that which obtains in any part of our Universe. They could not impress our senses or our souls. Among them and us—considering all, for the moment, collectively—there are no influences in common. Each exists, apart and independently, *in the bosom of its proper and particular God.*

In the conduct of this Discourse, I am aiming less at physical than at metaphysical order. The clearness with which even material phænomena are presented to the understanding, depends very little,

I have long since learned to perceive, upon a merely natural, and almost altogether upon a moral, arrangement. If then I seem to step somewhat too discursively from point to point of my topic, let me suggest that I do so in the hope of thus the better keeping unbroken that chain of *graduated impression* by which alone the intellect of Man can expect to encompass the grandeurs of which I speak, and, in their majestic totality, to comprehend them.

So far, our attention has been directed, almost exclusively, to a general and relative grouping of the stellar bodies in space. Of specification there has been little; and whatever ideas of *quantity* have been conveyed—that is to say, of number, magnitude, and distance—have been conveyed incidentally and by way of preparation for more definitive conceptions. These latter let us now attempt to entertain.

Our solar system, as has been already mentioned, consists, in chief, of one sun and sixteen planets certainly, but in all probability a few others, revolving around it as a centre, and attended by seventeen moons of which we know, with possibly several more of which as yet we know nothing. These various bodies are not true spheres, but oblate spheroids—spheres flattened at the poles of the imaginary axes about which they rotate:—the flattening being a consequence of the rotation. Neither is the Sun absolutely the centre of the system; for this Sun itself, with all the planets, revolves about a perpetually shifting point of space, which is the system's general centre of gravity. Neither are we to consider the paths through which these different spheroids move—the moons about the planets, the planets about the Sun, or the Sun about the common centre

—as circles in an accurate sense. They are, in fact, *ellipses—one of the foci being the point about which the revolution is made.* An ellipse is a curve, returning into itself, one of whose diameters is longer than the other. In the longer diameter are two points, equidistant from the middle of the line, and so situated otherwise that if, from each of them a straight line be drawn to any one point of the curve, the two lines, taken together, will be equal to the long diameter itself. Now let us conceive such an ellipse. At one of the points mentioned, which are the *foci*, let us fasten an orange. By an elastic thread let us connect this orange with a pea; and let us place this latter on the circumference of the ellipse. Let us now move the pea continuously around the orange—keeping always on the circumference of the ellipse. The elastic thread, which, of course, varies in length as we move the pea, will form what in geometry is called a *radius vector.* Now, if the orange be understood as the Sun, and the pea as a planet revolving about it, then the revolution should be made at such a rate—with a velocity so varying—that the *radius vector* may pass over *equal areas of space in equal times.* The progress of the pea *should be*—in other words, the progress of the planet *is*, of course,—slow in proportion to its distance from the Sun—swift in proportion to its proximity. Those planets, moreover, move the more slowly which are the farther from the Sun; *the squares of their periods of revolution having the same proportion to each other, as have to each other the cubes of their mean distances from the Sun.*

The wonderfully complex laws of revolution here described, however, are not to be understood as obtaining in our system alone. They *everywhere*

prevail where Attraction prevails. They control *the Universe*. Every shining speck in the firmament is, no doubt, a luminous Sun, resembling our own, at least in its general features, and having in attendance upon it a greater or less number of planets, greater or less, whose still lingering luminosity is not sufficient to render them visible to us at so vast a distance, but which, nevertheless, revolve, moon-attended, about their starry centres, in obedience to the principles just detailed—in obedience to the three omniprevalent laws of revolution—the three immortal laws *guessed* by the imaginative Kepler, and but subsequently demonstrated and accounted for by the patient and mathematical Newton. Among a tribe of philosophers who pride themselves excessively upon matter-of-fact, it is far too fashionable to sneer at all speculation under the comprehensive *sobriquet*, "guess-work." The point to be considered is, *who* guesses. In guessing with Plato, we spend our time to better purpose, now and then, than in harkening to a demonstration by Alcmæon.

In many works on Astronomy I find it distinctly stated that the laws of Kepler are *the basis* of the great principle, Gravitation. This idea must have arisen from the fact that the suggestion of these laws by Kepler, and his proving them *à posteriori* to have an actual existence, led Newton to account for them by the hypothesis of Gravitation, and, finally, to demonstrate them *à priori*, as necessary consequences of the hypothetical principle. Thus so far from the laws of Kepler being the basis of Gravity, Gravity is the basis of these laws—as it is, indeed, of all the laws, of the material Universe which are not referable to Repulsion alone.

The mean distance of the Earth from the Moon—

that is to say, from the heavenly body in our closest vicinity—is 237,000 miles. Mercury, the planet nearest the Sun, is distant from him 37 millions of miles. Venus, the next, revolves at a distance of 68 millions:—the Earth, which comes next, at a distance of 95 millions:—Mars, then, at a distance of 144 millions. Now come the eight Asteroids (Ceres, Juno, Vesta, Pallas, Astræa, Flora, Iris, and Hebe) at an average distance of about 250 millions. Then we have Jupiter, distant 490 millions; then Saturn, 900 millions; then Uranus, 19 hundred millions; finally Neptune, lately discovered, and revolving at a distance, say of 28 hundred millions. Leaving Neptune out of the account—of which as yet we know little accurately and which is, possibly, one of a system of Asteroids—it will be seen that, within certain limits, there exists an *order of interval* among the planets. Speaking loosely, we may say that each outer planet is twice as far from the Sun as is the next inner one. May not the *order* here mentioned—*may not the law of Bode—be deduced from consideration of the analogy suggested by me as having placed between the solar discharge of rings and the mode of the atomic irradiation?*

The numbers hurriedly mentioned in this summary of distance, it is folly to attempt comprehending, unless in the light of abstract arithmetical facts. They are not practically tangible ones. They convey no precise ideas. I have stated that Neptune, the planet farthest from the sun, revolves about him at a distance of 28 hundred millions of miles. So far good:—I have stated a mathematical fact; and, without comprehending it in the least, we may put it to use—mathematically. But in mentioning, even, that the Moon revolves about the Earth at the comparatively trifling distance of 237,000

miles, I entertained no expectation of giving any one to understand—to know—to feel—how far from the Earth the Moon actually *is*. 237,000 *miles!* There are, perhaps, few of my readers who have not crossed the Atlantic ocean; yet how many of them have a distinct idea of even the 3,000 miles intervening between shore and shore? I doubt, indeed, whether the man lives who can force into his brain the most remote conception of the interval between one milestone and its next neighbor upon the turnpike. We are in some meaure aided, however, in our consideration of distance, by combining this consideration with the kindred one of velocity. Sound passes through 1100 feet of space in a second of time. Now were it possible for an inhabitant of the Earth to see the flash of a cannon discharged in the Moon, and to hear the report, he would have to wait, after perceiving the former, more than 13 entire days and nights before getting any intimation of the latter.

However feeble be the impression, even thus conveyed, of the Moon's real distance from the Earth, it will, neverless, effect a good object in enabling us more clearly to see the futility of attempting to grasp such intervals as that of the 28 hundred millions of miles between our Sun and Neptune; or even that of the 95 millions between the Sun and the Earth we inhabit. A cannon-ball, flying at the greatest velocity with which such a ball has ever been known to fly, could not traverse the latter interval in less than 20 years; while for the former it would require 590.

Our Moon's real diameter is 2160 miles; yet she is comparatively so trifling an object that it would take nearly 50 such orbs to compose one as great as the Earth.

The diameter of our own globe is 7912 miles—but from the enunciation of these numbers what positive idea do we derive?

If we ascend an ordinary mountain and look around us from its summit, we behold a landscape stretching, say 40 miles, in every direction; forming a circle 250 miles in circumference; and including an area of 5000 square miles. The extent of such a prospect, on account of the *successiveness* with which its portions necessarily present themselves to view, can be only very feebly and very partially appreciated:—yet the entire panorama would comprehend no more than one 40,000th part of the mere *surface* of our globe. Were this panorama, then, to be succeeded, after the lapse of an hour, by another of equal extent; this again by a third, after the lapse of an hour; this again by a fourth after lapse of another hour—and so on, until the scenery of the whole Earth were exhausted; and were we to be engaged in examining these various panoramas for twelve hours of every day; we should nevertheless, be 9 years and 48 days in completing the general survey.

But if the mere surface of the Earth eludes the grasp of the imagination, what are we to think of its cubical contents? It embraces a mass of matter equal in weight to at least two sextillions, two hundred quintillions of tons. Let us suppose it in a state of quiescence; and now let us endeavor to conceive a mechanical force sufficient to set it in motion! Not the strength of all the myriads of beings whom we may conclude to inhabit the planetary worlds of our system—not the combined physical strength of *all* these beings—even admitting all to be more powerful than man—would avail to stir the ponderous mass *a single inch* from its position.

What are we to understand, then, of the force, which under similar circumstances, would be required to move the *largest* of our planets, Jupiter? This is 86,000 miles in diameter, and would include within its periphery more than a thousand orbs of the magnitude of our own. Yet this stupendous body is actually flying around the sun at the rate of 29,000 miles an hour—that is to say, with a velocity forty times greater than that of a cannon-ball! The thought of such a phænomenon cannot well be said to *startle* the mind:—it palsies and appals it. Not unfrequently we task our imagination in picturing the capacities of an angel. Let us fancy such a being at a distance of some hundred miles from Jupiter—a close eye-witness of this planet as it speeds on its annual revolution. Now *can* we, I demand, fashion for ourselves any conception so distinct of this ideal being's spiritual exaltation, as *that* involved in the supposition that, even by this immeasurable mass of matter, whirled immediately before his eyes, with a velocity so unutterable, he—an angel—angelic though he be—is not at once struck into nothingness and overwhelmed?

At this point, however, it seems proper to suggest that, in fact, we have been speaking of comparative trifles. Our Sun—the central and controlling orb of the system to which Jupiter belongs—is not only greater than Jupiter, but greater by far than all the planets of the system taken together. This fact is an essential condition, indeed, of the stability of the system itself. The diameter of Jupiter has been mentioned: it is 86,000 miles:—that of the Sun is 882,000 miles. An inhabitant of the latter, traveling ninety miles a day, would be more than eighty years in going round a great circle of its circumference. It occupies a cubical space of 681 quadrillions, 472 trillions of

miles. The Moon, as has been stated, revolves about the Earth at a distance of 237,000 miles—in an orbit, consequently, of nearly a million and a half. Now, were the Sun placed upon the Earth, centre over centre, the body of the former would extend, in every direction, not only to the line of the Moon's orbit, but beyond it, a distance of 200,000 miles.

And here, once again, let me suggest that, in fact, we have *still* been speaking of comparative trifles. The distance of the planet Neptune from the Sun has been stated: it is 28 hundred millions of miles: the circumference of its orbit, therefore, is about 17 billions. Let this be borne in mind while we glance at some one of the brightest stars. Between this and the star of *our* system, (the Sun,) there is a gulf of space, to convey any idea of which, we should need the tongue of an archangel. From *our* system, then, and from *our* Sun, or star, the star at which we suppose ourselves glancing is a thing altogether apart:—still, for the moment, let us imagine it placed upon our Sun, centre over centre, as we just now imagined this Sun itself placed upon the Earth. Let us now conceive the particular star we have in mind, extending, in every direction, beyond the orbit of Mercury—of Venus—of the Earth:—still *on*, beyond the orbit of Mars—of Jupiter—of Uranus—until, finally, we fancy it filling the circle—*seventeen billions of miles in circumference*—which is described by the revolution of Leverrier's planet. When we have conceived all this, we shall have entertained no extravagant conception. There is the very best reason for believing that many of the stars are even far larger than the one we have imagined. I mean to say, that we have the very best *empirical* basis for such belief:—and, in looking back at the original, atomic arrangements for *diversity*, which have been

assumed as a part of the Divine plan in the constitution of the Universe, we shall be enabled easily to understand, and to credit, the existence of even far vaster disproportions in stellar size than any to which I have hitherto alluded. The largest orbs, of course, we must expect to find rolling through the widest vacancies of Space.

I remarked, just now, that to convey an idea of the interval between our Sun and any one of the other stars, we should require the eloquence of an archangel. In so saying, I should not be accused of exaggeration; for, in simple truth, these are topics on which it is scarcely possible to exaggerate. But let us bring the matter more distinctly before the eye of the mind.

In the first place, we may get a general, *relative* conception of the interval referred to, by comparing it with the inter-planetary spaces. If, for example, we suppose the Earth, which is, in reality, 95 millions of miles from the Sun, to be only *one foot* from that luminary; then Neptune would be forty feet distant; *and the star Alpha Lyræ*, at *the very least*, *one hundred and fifty-nine.*

Now I presume that, in the termination of my last sentence, few of my readers have noticed anything especially objectionable—particularly wrong. I said that the distance of the Earth from the Sun being taken at *one foot*, the distance of Neptune would be forty feet, and that of Alpha Lyræ, one hundred and fifty-nine. The proportion between one foot and one hundred and fifty nine, has appeared, perhaps, to convey a sufficiently definite impression of the proportion between the two intervals —that of the Earth from the Sun, and that of Alpha Lyræ from the same luminary. But my account of the matter should, in reality, have run thus:—The

distance of the Earth from the Sun being taken at one foot, the distance of Neptune would be forty feet, and that of Alpha Lyræ, one hundred and fifty-nine——*miles:*—that is to say, I had assigned to Alpha Lyræ, in my first statement of the case, only the 5280*th part* of that distance which is the *least distance possible* at which it can actually lie.

To proceed:—However distant a mere *planet* is, yet when we look at it through a telescope, we see it under a certain form—of a certain appreciable size. Now I have already hinted at the probable bulk of many of the stars; nevertheless, when we view any one of them, even through the most powerful telescope, it is found to present us with *no form*, and consequently with *no magnitude* whatever. We see it as a point, and nothing more.

Again:—Let us suppose ourselves walking, at night, on a highway. In a field on one side of the road, is a line of tall objects, say trees, the figures of which are distinctly defined against the background of the sky. This line of objects extends at right angles to the road, and from the road to the horizon. Now, as we proceed along the road, we see these objects changing their positions, respectively, in relation to a certain fixed point in that portion of the firmament which forms the background of the view. Let us suppose this fixed point—sufficiently fixed for our purpose—to be the rising moon. We become aware, at once, that while the tree nearest us so far alters its position in respect to the moon, as to seem flying behind us, the tree in the extreme distance has scarcely changed at all its relative position with the satellite. We then go on to perceive that the farther the objects are from us, the less they alter their positions; and the converse. Then we begin, unwittingly, to estimate the distances of in-

dividual trees by the degrees in which they evince the relative alteration. Finally, we come to understand how it might be possible to ascertain the actual distance of any given tree in the line, by using the amount of relative alteration as a basis in a simple geometrical problem. Now, this relative alteration is what we call "parallax;" and by parallax we calculate the distances of the heavenly bodies. Applying the principle to the trees in question, we should, of course, be very much at a loss to comprehend the distance of *that* tree, which, however far we proceeded along the road, should evince *no* parallax at all. This, in the case described, is a thing impossible; but impossible only because all distances on our Earth are trivial indeed:—in comparison with the vast cosmical quantities, we may speak of them as absolutely nothing.

Now, let us suppose the Star Alpha Lyræ directly overhead; and let us imagine that, instead of standing on the Earth, we stand at one end of a straight road stretching through Space to a distance equalling the diameter of the Earth's orbit—that is to say, to a distance of *one hundred and ninety millions of miles*. Having observed, by means of the most delicate micrometrical instruments, the exact position of the star, let us now pass along this inconceivable road, until we reach the other extremity. Now, once again, let us look at the star. It is *precisely* where we left it. Our instruments, however delicate, assure us that its relative position is absolutely—is identically the same, as at the commencement of our unutterable journey. *No* parallax—none whatever—has been found.

The fact is, that, in regard to the distance of the fixed stars—of any one of the myriads of suns glistening on the farther side of that awful chasm

which separates our system from its brothers in the cluster to which it belongs—astronomical science, until very lately, could speak only with a negative certainty. Assuming the brightest as the nearest, we could say, even of *them*, only that there is a certain incomprehensible distance on the *hither* side of which they cannot be:—how far they are beyond it we had in no case been able to ascertain. We perceived, for example, that Alpha Lyræ cannot be nearer to us than 19 trillions, 200 billions of miles; but, for all we knew, and indeed for all we now know, it may be distant from us the square, or the cube, or any other power of the number mentioned. By dint, however, of wonderfully minute and cautious observations, continued, with novel instruments, for many laborious years, *Bessel*, not long ago deceased, has lately succeeded in determining the distance of six or seven stars; among others, that of the star numbered 61 in the constellation of the Swan. The distance in this latter instance ascertained, is 670,000 times that of the Sun; which last it will be remembered, is 95 millions of miles. The star 61 Cygni, then, is nearly 64 trillions of miles from us—or more than three times the distance assigned, *as the least possible*, for Alpha Lyræ.

In attempting to appreciate this interval by the aid of any considerations of *velocity*, as we did in endeavoring to estimate the distance of the moon, we must leave out of sight, altogether, such nothings as the speed of a cannon ball, or of sound. Light, however, according to the latest calculations of Struve, proceeds at the rate of 167,000 miles in a second. Thought itself cannot pass through this interval more speedily—if, indeed, thought can traverse it at all. Yet, in coming from 61 Cygni to us, even at this inconceivable rate, light occupies more

than *ten years;* and, consequently, were the star this moment blotted out from the Universe still, *for ten years*, would it continue to sparkle on, undimmed in its paradoxical glory.

Keeping now in mind whatever feeble conception we may have attained of the interval between our Sun and 61 Cygni, let us remember that this interval, however unutterably vast, we are permitted to consider as but the *average* interval among the countless host of stars composing that cluster, or "nebula," to which our system, as well as that of 61 Cygni, belongs. I have, in fact, stated the case with great moderation:—we have excellent reason for believing 61 Cygni to be one of the *nearest* stars, and thus for concluding, at least for the present, that its distance from us is *less* than the average distance between star and star in the magnificent cluster of the Milky Way.

And here, once again and finally, it seems proper to suggest that even as yet we have been speaking of trifles. Ceasing to wonder at the space between star and star in our own or in any particular cluster, let us rather turn our thoughts to the intervals between cluster and cluster, in the all-comprehensive cluster of the Universe.

I have already said that light proceeds at the rate of 167,000 miles in a second—that is, about 10 millions of miles in a minute, or about 600 millions of miles in an hour:—yet so far removed from us are some of the "nebulæ" that even light, speeding with this velocity, could not and does not reach us, from those mysterious regions, in less than 3 *millions of years*. This calculation, moreover, is made by the elder Herschel, and in reference merely to those comparatively proximate clusters within the scope of his own telescope. There *are* "nebulæ," however, which, through the magical tube of Lord Rosse, are

this instant whispering in our ears the secrets of *a million of ages* by-gone. In a word, the events which we behold now—at this moment—in those worlds—are the identical events which interested their inhabitants *ten hundred thousand centuries ago.* In intervals—in distances such as this suggestion forces upon the *soul*—rather than upon the mind—we find, at length, a fitting climax to all hitherto frivolous considerations of *quantity.*

Our fancies thus occupied with the cosmical distances, let us take the opportunity of referring to the difficulty which we have so often experienced, while pursuing *the beaten path* of astronomical reflection, *in accounting* for the immeasurable voids alluded to—in comprehending why chasms so totally unoccupied and therefore apparently so needless have been made to intervene between star and star—between cluster and cluster—in understanding, to be brief, a sufficient reason for the Titanic scale, in respect of mere *Space*, on which the Universe is seen to be constructed. A rational cause for the phænomenon, I maintain that Astronomy has palpably failed to assign:—but the considerations through which, in this Essay, we have proceeded step by step, enable us clearly and immediately to perceive that *Space and Duration are one.* That the Universe might *endure* throughout an æra at all commensurate with the grandeur of its component material portions and with the high majesty of its spiritual purposes, it was necessary that the original atomic diffusion be made to so inconceivable an extent as to be only not infinite. It was required, in a word, that the stars should be gathered into visibility from invisible nebulosity—proceed from nebulosity to consolidation—and so grow grey in giving birth and death to unspeakably numerous and complex varia-

tions of vitalic development:—it was required that the stars should do all this—should have time thoroughly to accomplish all these Divine purposes—*during the period* in which all things were effecting their return into Unity with a velocity accumulating in the inverse proportion of the squares of the distances at which lay the inevitable End.

Throughout all this we have no difficulty in understanding the absolute accuracy of the Divine *adaptation*. The density of the stars, respectively, proceeds, of course, as their condensation diminishes; condensation and heterogeneity keep pace with each other; through the latter, which is the index of the former, we estimate the vitalic and spiritual development. Thus, in the density of the globes, we have the measure in which their purposes are fulfilled. *As* density proceeds—*as* the divine intentions *are* accomplished—*as* less and still less remains *to be* accomplished—so—in the same ratio—should we expect to find an acceleration of *the End;*—and thus the philosophical mind will easily comprehend that the Divine designs in constituting the stars, advance *mathematically* to their fulfilment:—and more; it will readily give the advance a mathematical expression; it will decide that this advance is inversely proportional with the squares of the distances of all created things from the starting-point and goal of their creation.

Not only is this Divine adaptation, however, mathematically accurate, but there is that about it which stamps it *as divine*, in distinction from that which is merely the work of human constructiveness. I allude to the complete *mutality* of adaptation. For example; in human constructions a particular cause has a particular effect; a particular intention brings to pass a particular object; but this is all; we see no

reciprocity. The effect does not re-act upon the cause; the intention does not change relations with the object. In Divine constructions the object is either design or object as we choose to regard it—and we may take at any time a cause for an effect, or the converse—so that we can never absolutely decide which is which.

To give an instance:—In polar climates the human frame, to maintain its animal heat, requires, for combustion in the capillary system, an abundant supply of highly azotized food, such as train-oil. But again:—in polar climates nearly the sole food afforded man is the oil of abundant seals and whales. Now, whether is oil at hand because imperatively demanded, or the only thing demanded because the only thing to be obtained? It is impossible to decide. There is an absolute *reciprocity of adaptation.*

The pleasure which we derive from any display of human ingenuity is in the ratio of *the approach* to this species of reciprocity. In the construction of *plot*, for example, in fictitious literature, we should aim at so arranging the incidents that we shall not be able to determine, of any one of them, whether it depends from any one other or upholds it. In this sense, of course, *perfection* of *plot* is really, or practically, unattainable—but only because it is a finite intelligence that constructs. The plots of God are perfect. The Universe is a plot of God.

And now we have reached a point at which the intellect is forced, again, to struggle against its propensity for analogical inference—against its monomaniac grasping at the infinite. Moons have been seen *revolving* about planets; planets about stars; and the poetical instinct of humanity—its instinct of the symmetrical, if the symmetry be but a symmetry of surface:—this *instinct*, which the

Soul, not only of Man but of all created beings, took up, in the beginning, from the *geometrical* basis of the Universal irradiation—impels us to the fancy of an endless extension of this system of *cycles*. Closing our eyes equally to *de*duction and *in*duction, we insist upon imagining a *revolution* of all the orbs of the Galaxy about some gigantic globe which we take to be the central pivot of the whole. Each cluster in the great cluster of clusters is imagined, of course, to be similarly supplied and constructed; while, that the "analogy" may be wanting at no point, we go on to conceive these clusters themselves, again, as *revolving* about some still more august sphere;—this latter, still again, *with* its encircling clusters, as but one of a yet more magnificent series of agglomerations, *gyrating* about yet another orb central *to them*—some orb still more unspeakably sublime—some orb, let us rather say, of infinite sublimity endlessly multiplied by the infinitely sublime. Such are the conditions, continued in perpetuity, which the voice of what some people term "analogy" calls upon the Fancy to depict and the Reason to contemplate, if possible, without becoming dissatisfied with the picture. Such, *in general*, are the interminable gyrations beyond gyration which we have been instructed by Philosophy to comprehend and to account for, at least in the best manner we can. Now and then, however, a philosopher proper—one whose frenzy takes a very determinate turn—whose genius, to speak more reverentially, has a strongly pronounced washer-womanish bias, doing everything up by the dozen—enables us to see *precisely* that point out of sight, at which the revolutionary processes in question do, and of right ought to, come to an end.

It is hardly worth while, perhaps, even to sneer at

the reveries of Fourrier:—but much has been said, latterly, of the hypothesis of Mädler—that there exists, in the centre of the Galaxy, a stupendous globe about which all the systems of the cluster revolve. The *period* of our own, indeed, has been stated—117 millions of years.

That our Sun has a motion in space, independently of its rotation, and revolution about the system's centre of gravity, has long been suspected. This motion, granting it to exist, would be manifested perspectively. The stars in that firmamental region which we were leaving behind us, would, in a very long series of years, become crowded; those in the opposite quarter, scattered. Now, by means of astronomical History, we ascertain, cloudily, that some such phænomena have occurred. On this ground it has been declared that our system is moving to a point in the heavens diametrically opposite the star Zeta Herculis:—but this inference is, perhaps, the maximum to which we have any logical right. Mädler, however, has gone so far as to designate a particular star, Alcyone in the Pleiades, as being at or about the very spot around which a general *revolution* is performed.

Now, since by "analogy" we are led, in the first instance, to these dreams, it is no more than proper that we should abide by analogy, at least in some measure, during their development; and that analogy which suggests the revolution, suggests at the same time a central orb about which it should be performed:—so far the astronomer was consistent. This central orb, however, should, dynamically, be greater than all the orbs, taken together, which surround it. Of these there are about 100 millions. "Why, then," it was of course demanded, "do we not *see* this vast central sun—*at least equal* in mass to

100 millions of such suns as ours—why do we not *see* it—*we*, especially, who occupy the mid region of the cluster—the very locality *near* which, at all events, must be situated this incomparable star?" The reply was ready—"It must be non-luminous, as are our planets." Here, then, to suit a purpose, analogy is suddenly let fall. "Not so," it may be said—"we know that non-luminous suns actually exist." It is true that we have reason at least for supposing so; but we have certainly no reason whatever for supposing that the non-luminous suns in question are encircled by *luminous* suns, while these again are surrounded by non-luminous planets:—and it is precisely all this with which Mädler is called upon to find any thing analogous in the heavens—for it is precisely all this which he imagines in the case of the Galaxy. Admitting the thing to be so, we cannot help here picturing to ourselves how sad a puzzle the *why is it so* must prove to all *à priori* philosophers.

But granting, in the very teeth of analogy and of everything else, the non-luminosity of the vast central orb, we may still inquire how this orb, so enormous, could fail of being rendered visible by the flood of light thrown upon it from the 100 millions of glorious suns glaring in all directions about it. Upon the urging of this question, the idea of an actually solid central sun appears, in some measure, to have been abandoned; and speculation proceeded to assert that the systems of the cluster perform their revolutions merely about an immaterial centre of gravity common to all. Here again then, to suit a purpose, analogy is let fall. The planets of our system revolve, it is true, about a common centre of gravity; but they do this in connexion with, and in consequence of, a material sun whose mass more than counterbalances the rest of the system.

The mathematical circle is a curve composed of an infinity of straight lines. But this idea of the circle—an idea which, in view of all ordinary geometry, is merely the mathematical, as contradistinguished from the practical, idea—is, in sober fact, the *practical* conception which alone we have any right to entertain in regard to the majestic circle with which we have to deal, at least in fancy, when we suppose our system revolving about a point in the centre of the Galaxy. Let the most vigorous of human imaginations attempt but to take a single step towards the comprehension of a sweep so ineffable! It would scarcely be parodoxical to say that a flash of lightning itself, travelling *forever* upon the circumference of this unutterable circle, would still, *forever*, be travelling in a straight line. That the path of our Sun in such an orbit would, to any human perception, deviate in the slightest degree from a straight line, even in a million of years, is a proposition not to be entertained:—yet we are required to believe that a curvature has become apparent during the brief period of our astronomical history—during a mere point—during the utter nothingness of two or three thousand years.

It may be said that Mädler *has* really ascertained a curvature in the direction of our system's now well-established progress through Space. Admitting, if necessary, this fact to be in reality such, I maintain that nothing is thereby shown except the reality of this fact—the fact of a curvature. For its *thorough* determination, ages will be required; and, when determined, it will be found indicative of some binary or other multiple relation between our Sun and some one or more of the proximate stars. I hazard nothing however, in predicting, that, after the lapse of many centuries, all efforts at determining the

path of our Sun through Space, will be abandoned as fruitless. This is easily conceivable when we look at the infinity of perturbation it must experience, from its perpetually-shifting relations with other orbs, in the common approach of all to the nucleus of the Galaxy.

But in examining other "nebulæ" than that of the Milky Way—in surveying, generally, the clusters which overspread the heavens—do we or do we not find confirmation of Mädler's hypothesis? We do *not*. The forms of the clusters are exceedingly diverse when casually viewed; but on close inspection through powerful telescopes, we recognise the sphere, very distinctly, as at least the proximate form of all: —their constitution, in general, being at variance with the idea of revolution about a common centre.

"It is difficult," says Sir John Herschel, "to form any conception of the dynamical state of such systems. On one hand, without a rotary motion and a centrifugal force, it is hardly possible not to regard them as in a state of *progressive collapse*. On the other, granting such a motion and such a force, we find it no less difficult to reconcile their forms with the rotation of the whole system [meaning cluster] around any single axis, without which internal collision would appear to be inevitable."

Some remarks lately made about the "nebulæ" by Dr. Nichol, in taking quite a different view of the cosmical conditions from any taken in this Discourse —have a very peculiar applicability to the point now at issue. He says:

"When our greatest telescopes are brought to bear upon them, we find that those which were thought to be irregular, are not so; they approach nearer to a globe. Here is one that looked oval; but Lord Rosse's telescope brought it into a circle. . . . Now

there occurs a very remarkable circumstance in reference to these comparatively sweeping circular masses of nebulæ. We find they are not entirely circular, but the reverse; and that all around them, on every side, there are volumes of stars, *stretching out apparently as if they were rushing towards a great central mass in consequence of the action of some great power.*"*

Were I to describe, in my own words, what must necessarily be the existing condition of each nebula on the hypothesis that all matter is, as I suggest, now returning to its original Unity, I should simply be going over, nearly verbatim, the language here employed by Dr. Nichol, without the faintest suspicion of that stupendous truth which is the key to these nebular phænomena.

And here let me fortify my position still farther, by the voice of a greater than Mädler—of one, moreover, to whom all the data of Mädler have long been familiar things, carefully and thoroughly considered. Referring to the elaborate calculations of Argelander —the very researches which form Mädler's basis— *Humboldt*, whose generalizing powers have never, perhaps, been equalled, has the following observation:

"When we regard the real, proper, or non-perspective motions of the stars, we find *many groups of them moving in opposite directions;* and the data as yet in hand render it not necessary, at least, to conceive that the systems composing the Milky Way, or the clusters, generally, composing the Universe, are revolving about any particular centre unknown, whether luminous or nonluminous. It is but Man's

* I must be understood as denying, *especially*, only the *revolutionary* portion of Mädler's hypothesis. Of course, if no great central orb exists *now* in our cluster, such will exist hereafter. Whenever existing, it will be merely the *nucleus* of the consolidation.

longing for a fundamental First Cause, that impels both his intellect and fancy to the adoption of such an hypothesis."*

The phænomenon here alluded to—that of "many groups moving in opposite directions"—is quite inexplicable by Mädler's idea; but arises, as a necessary consequence, from that which forms the basis of this Discourse. While the *merely general direction* of each atom—of each moon, planet, star, or cluster—would, on my hypothesis, be, of course, absolutely rectilinear, while the *general* path of all bodies would be a right line leading to the centre of all; it is clear, nevertneless, that this general rectilinearity would be compounded of what, with scarcely any exaggeration, we may term an infinity of particular curves—an infinity of local deviations from rectilinearity—the result of continuous differences of relative position among the multitudinous masses, as each proceeded on its own proper journey to the End.

I quoted, just now, from Sir John Herschel, the following words, used in reference to the clusters:—"On one hand, without a rotary motion and a centrifugal force, it is hardly possible not to regard them as in a state of *progressive collapse*." The fact is, that, in surveying the "nebulæ" with a telescope of high power, we shall find it quite impossible, having once conceived this idea of "collapse," not to

* Betrachtet man die nicht perspectivischen eigenen Bewegungen der Sterne, so scheinen viele gruppenweise in ihrer Richtung entgegengesetzt; und die bisher gesammelten Thatsachen machen es auf's wenigste nicht nothwendig, anzunehmen, dass alle Theile unserer Sternenschicht oder gar der gesammten Sterneninseln, welche den Weltraum füllen, sich um einen grossen, unbekannten, leuchtenden oder, dunkeln Centralkörper bewegen. Das Streben nach den letzten und höchsten Grundursachen macht freilich die reflectirende Thätigkeit des Menschen, wie seine Phantasie, zu einer solchen Annahme geneigt.

gather, at all points, corroboration of the idea. A nucleus is always apparent, in the direction of which the stars seem to be precipitating themselves; nor can these nuclei be mistaken for merely perspective phænomena:—the clusters are *really* denser near the centre—sparser in the regions more remote from it. In a word, we see every thing as we *should* see it were a collapse taking place; but, in general, it may be said of these clusters, that we can fairly entertain, while looking at them, the idea of *orbital movement about a centre*, only by admitting the *possible* existence, in the distant domains of space, of dynamical laws with which *we* are unacquainted.

On the part of Herschel, however, there is evidently *a reluctance* to regard the nebulæ as in "a state of progressive collapse." But if facts—if even appearances justify the supposition of their being in this state, *why*, it may well be demanded, is he disinclined to admit it? Simply on account of a prejudice;—merely because the supposition is at war with a pre-conceived and utterly baseless notion—that of the endlessness—that of the eternal stability of the Uinverse.

If the propositions of this Discourse are tenable, the "state of progressive-collapse" is *precisely* that state in which alone we are warranted in considering All Things; and, with due humility, let me here confess that, for my part, I am at a loss to conceive how any *other* understanding of the existing condition of affairs, could ever have made its way into the human brain. "The tendency to collapse" and "the attraction of gravitation" are convertible phrases. In using either, we speak of the reaction of the First Act. Never was necessity less obvious than that of supposing Matter imbued with an ineradicable *quality* forming part of its material nature—a

quality, or instinct, *forever* inseparable from it, and by dint of which inalienable principle every atom is *perpetually* impelled to seek its fellow-atom. Never was necessity less obvious than that of entertaining this unphilosophical idea. Going boldly behind the vulgar thought, we have to conceive, metaphysically, that the gravitating principle appertains to Matter *temporarily*—only while diffused—only while existing as Many instead of as One—appertains to it by virtue of its state of irradiation alone—appertains, in a word, altogether to its *condition*, and not in the slightest degree to *itself*. In this view, when the irradiation shall have returned into its source—when the reaction shall be completed—the gravitating principle will no longer exist. And, in fact, astronomers, without at any time reaching the idea here suggested, seem to have been approximating it, in the assertion that "if there were but one body in the universe, it would be impossible to understand how the principle, Gravity, could obtain": that is to say, from a consideration of Matter as they find it, they reach a conclusion at which I deductively arrive. That so pregnant a suggestion as the one quoted should have been permitted to remain so long unfruitful, is, nevertheless, a mystery which I find it difficult to fathom.

It is, perhaps, in no little degree, however, our propensity for the continuous—for the analogical—in the present case more particularly for the symmetrical—which has been leading us astray. And, in fact, the sense of the symmetrical is an instinct which may be depended upon with an almost blindfold reliance. It is the poetical essence of the Universe—*of the Universe* which, in the supremeness of its symmetry, is but the most sublime of poems. Now symmetry and consistency are convertible

terms:—thus Poetry and Truth are one. A thing is consistent in the ratio of its truth—true in the ratio of its consistency. *A perfect consistency, I repeat, can be nothing but an absolute truth.* We may take it for granted, then, that Man cannot long or widely err, if he suffer himself to be guided by this poetical, which I have maintained to be his truthful, in being his symmetrical, instinct. He must have a care, however, lest, in pursuing too heedlessly the superficial symmetry of forms and motions, he leave out of sight the really essential symmetry of the principles which determine and control them.

That the stellar bodies would finally be merged in one—that, at last, all would be drawn into the substance of *one stupendous central orb already existing*—is an idea which, for some time past, seems, vaguely and indeterminately, to have held possession of the fancy of mankind. It is an idea, in fact, which belongs to the class of the *excessively obvious*. It springs, instantly, from a superficial observation of the cyclic and seemingly *gyrating* or *vortical* movements of those individual portions of the Universe which come most immediately and most closely under our observation. There is not, perhaps, a human being, of ordinary education and of average reflective capacity, to whom, at some period, the fancy in question has not occurred, as if spontaneously, or intuitively, and wearing all the character of a very profound and very original conception. This conception, however, so commonly entertained, has never, within my knowledge, arisen out of any abstract considerations. Being, on the contrary, always suggested, as I say, by the vortical movements about centres, a reason for it, also,—a *cause* for the ingathering of all the orbs into one, *imagined to be already existing*, was naturally sought in the

same direction—among these cyclic movements themselves.

Thus it happened that, on announcement of the gradual and perfectly regular decrease observed in the orbit of Encke's comet, at every successive revolution about our Sun, astronomers were nearly unanimous in the opinion that the cause in question was found—that a principle was discovered sufficient to account, physically, for that final, universal agglomeration which, I repeat, the analogical, symmetrical, or poetical instinct of man had predetermined to understand as something more than a simple hypothesis.

This cause—this sufficient reason for the final ingathering—was declared to exist in an exceedingly rare but still material medium pervading space; which medium, by retarding, in some degree, the progress of the comet, perpetually weakened its tangential force; thus giving a predominance to the centripetal; which, of course, drew the comet nearer and nearer at each revolution, and would eventually precipitate it upon the Sun.

All this was strictly logical—admitting the medium of ether; but this ether was assumed, most illogically, on the ground that no *other* mode than the one spoken of could be discovered, of accounting for the observed decrease in the orbit of the comet:—as if from the fact that we could *discover* no other mode of accounting for it, it followed, in any respect, that no other mode of accounting for it existed. It is clear that innumerable causes might operate, in combination, to diminish the orbit, without even a possibility of our ever becoming acquainted with one of them. In the meantime, it has never been fairly shown, perhaps, why the retardation occasioned by the skirts of the Sun's atmosphere, through which

the comet passes at perihelion, is not enough to account for the phænomenon. That Encke's comet will be absorbed into the Sun, is probable; that all the comets of the system will be absorbed, is more than merely possible; but, in such cases, the principle of absorption must be referred to eccentricity of orbit—to the close approximation to the Sun, of the comets at their perihelia; and is a principle not affecting, in any degree, the ponderous *spheres*, which are to be regarded as the true material constituents of the Universe. Touching comets in general, let me here suggest, in passing, that we cannot be far wrong in looking upon them as the *lightning-flashes of the cosmical Heaven.*

The idea of a retarding ether, and, through it, of a final agglomeration of all things, seemed at one time, however, to be confirmed by the observation of a positive decrease in the orbit of the solid moon. By reference to eclipses recorded 2500 years ago, it was found that the velocity of the satellite's revolution *then* was considerably less than it is *now;* that on the hypothesis that its motions in its orbit is uniformly in accordance with Kepler's law, and was accurately determined *then*—2500 years ago—it is now in advance of the position it *should* occupy, by nearly 9000 miles. The increase of velocity proved, of course, a diminution of orbit; and astronomers were fast yielding to a belief in an ether, as the sole mode of accounting for the phænomenon, when Lagrange came to the rescue. He showed that, owing to the configurations of the spheroids, the shorter axes of their ellipses are subject to variation in length; the longer axes being permanent; and that this variation is continuous and vibratory—so that every orbit is in a state of transition, either from circle to ellipse, or from ellipse to circle. In the case

of the moon, where the shorter axis is *de*creasing, the orbit is passing from circle to ellipse, and, consequently, is *de*creasing too; but, after a long series of ages, the ultimate eccentricity will be attained; then the shorter axis will proceed to *in*crease, until the orbit becomes a circle; when the process of shortening will again take place;—and so on forever. In the case of the Earth, the orbit is passing from ellipse to circle. The facts thus demonstrated do away, of course, with all necessity for supposing an ether, and with all apprehension of the system's instability—on the ether's account.

It will be remembered that I have myself assumed what we may term *an ether*. I have spoken of a subtle *influence* which we know to be ever in attendance upon matter, although becoming manifest only through matter's heterogeneity. To this *influence*—without daring to touch it at all in any effort at explaining its awful *nature*—I have referred the various phænomena of electricity, heat, light, magnetism; and more—of vitality, consciousness, and thought—in a word, of spirituality. It will be seen, at once, then, that the ether thus conceived is radically distinct from the ether of the astronomers; inasmuch as theirs is *matter* and mine *not*.

With the idea of material ether, seems, thus, to have departed altogether the thought of that universal agglomeration so long predetermined by the poetical fancy of mankind:—an agglomeration in which a sound Philosophy might have been warranted in putting faith, at least to a certain extent, if for no other reason than that by this poetical fancy it *had* been so predetermined. But so far as Astronomy—so far as mere Physics have yet spoken, the cycle of the Universe has no conceivable end. Had an end been demonstrated, however, from so

purely collateral a cause as an ether, Man's instinct of the Divine *capacity to adapt*, would have rebelled against the demonstration. We should have been forced to regard the Universe with some such sense of dissatisfaction as we experience in contemplating an unnecessarily complex work of human art. Creation would have affected us as an imperfect *plot* in a romance, where the *dénoûment* is awkwardly brought about by interposed incidents external and foreign to the main subject; instead of springing out of the bosom of the thesis—out of the heart of the ruling idea—instead of arising as a result of the primary proposition—as inseparable and inevitable part and parcel of the fundamental conception of the book.

What I mean by the symmetry of mere surface will now be more clearly understood. It is simply by the blandishment of this symmetry that we have been beguiled into the general idea of which Mädler's hypothesis is but a part—the idea of the vortical in-drawing of the orbs. Dismissing this nakedly physical conception, the symmetry of principle sees the end of all things metaphysically involved in the thought of a beginning; seeks and finds in this origin of all things the *rudiment* of this end; and perceives the impiety of supposing this end likely to be brought about less simply—less directly—less obviously—less artistically—than through *the reaction of the originating Act.*

Recurring, then, to a previous suggestion, let us understand the systems—let us understand each star, with its attendant planets—as but a Titanic atom existing in space with precisely the same inclination for Unity which characterized, in the beginning, the actual atoms after their irradiation throughout the Universal sphere. As these original

atoms rushed towards each other in generally straight lines, so let us conceive as at least generally rectilinear, the paths of the system-atoms towards their respective centres of aggregation:—and in this direct drawing together of the systems into clusters, with a similar and simultaneous drawing together of the clusters themselves while undergoing consolidation, we have at length attained the great *Now*—the awful Present—the Existing Condition of the Universe.

Of the still more awful Future a not irrational analogy may guide us in framing an hypothesis. The equilibrium between the centripetal and centrifugal forces of each system, being necessarily destroyed upon attainment of a certain proximity to the nucleus of the cluster to which it belongs, there must occur, at once, a chaotic or seemingly chaotic precipitation, of the moons upon the planets, of the planets upon the suns, and of the suns upon the nuclei; and the general result of this precipitation must be the gathering of the myriad now-existing stars of the firmament into an almost infinitely less number of almost infinitely superior spheres. In being immeasurably fewer, the worlds of that day will be immeasurably greater than our own. Then, indeed, amid unfathomable abysses, will be glaring unimaginable suns. But all this will be merely a climactic magnificence foreboding the great End. Of this End the new genesis described, can be but a very partial postponement. While undergoing consolidation, the clusters themselves, with a speed prodigiously accumulative, have been rushing towards their own general centre—and now, with a thousandfold electric velocity, commensurate only with their material grandeur and with the spiritual passion of their appetite for oneness, the majestic remnants of

the tribe of Stars flash, at length, into a common embrace. The inevitable catastrophe is at hand.

But this catastrophe—what is it? We have seen accomplished the ingathering of the orbs. Henceforward, are we not to understand *one material globe of globes* as constituting and comprehending the Universe? Such a fancy would be altogether at war with every assumption and consideration of this Discourse.

I have already alluded to that absolute *reciprocity of adaptation* which is the idiosyncrasy of the divine Art—stamping it divine. Up to this point of our reflections, we have been regarding the electrical influence as a something by dint of whose repulsion alone Matter is enabled to exist in that state of diffusion demanded for the fulfilment of its purposes: —so far, in a word, we have been considering the influence in question as ordained for Matter's sake to subserve the objects of matter. With a perfectly legitimate reciprocity, we are now permitted to look at Matter, as created *solely for the sake of this influence*—solely to serve the objects of this spiritual Ether. Through the aid—by the means—through the agency of Matter, and by dint of its heterogeneity —is this Ether manifested—is *Spirit individualized.* It is merely in the development of this Ether, through heterogeneity, that particular masses of Matter become animate—sensitive—and in the ratio of their heterogeneity;—some reaching a degree of sensitiveness involving what we call *Thought*, and thus attaining Conscious Intelligence.

In this view, we are enabled to perceive Matter as a Means—not as an End. Its purposes are thus seen to have been comprehended in its diffusion; and with the return into Unity these purposes cease. The absolutely consolidated globe of globes would

be *objectless:*—therefore not for a moment could it continue to exist. Matter, created for an end, would unquestionably, on fulfilment of that end, be Matter no longer. Let us endeavor to understand that it would disappear, and that God would remain all in all.

That every work of Divine conception must coexist and coexpire with its particular design, seems to me especially obvious; and I make no doubt that, on perceiving the final globe of globes to be *objectless*, the majority of my readers will be satisfied with my "*therefore* it cannot continue to exist." Nevertheless, as the startling thought of its instantaneous disappearance is one which the most powerful intellect cannot be expected readily to entertain on grounds so decidedly abstract, let us eddeavor to look at the idea from some other and more ordinary point of view:—let us see how thoroughly and beautifully it is corroborated in an *à posteriori* consideration of Matter as we actually find it.

I have before said that "Attraction and Repulsion being undeniably the sole properties by which Matter is manifested to Mind, we are justified in assuming that Matter *exists* only as Attraction and Repulsion —in other words that Attraction and Repulsion *are* Matter; there being no conceivable case in which we may not employ the term Matter and the terms 'Attraction' and 'Repulsion' taken together, as equivalent, and therefore convertible, expressions of Logic."*

Now the very definition of Attraction implies particularity—the existence of parts, particles, or atoms; for we define it as the tendency of "each atom &c. to every other atom," &c. according to a certain law. Of course where there are *no* parts—where there is absolute Unity—where the tendency to oneness is satisfied—there can be no Attraction:—

*Page 150.

this has been fully shown, and all Philosophy admits it. When, on fulfilment of its purposes, then, Matter shall have returned into its original conditions of *One*—a condition which presupposes the expulsion of the separative ether, whose province and whose capacity are limited to keeping the atoms apart until that great day when, this ether being no longer needed, the overwhelming pressure of the finally collective Attraction shall at length just sufficiently predominate* and expel it:—when, I say, Matter, finally, expelling the Ether, shall have returned into absolute Unity,—it will then (to speak paradoxically for the moment) be Matter without Attraction and without Repulsion—in other words, Matter without Matter—in other words, again, Matter *no more*. In sinking into Unity, it will sink at once into that Nothingness which, to all Finite Perception, Unity must be—into that Material Nihility from which alone we can conceive it to have been evoked—to have been *created* by the Volition of God.

I repeat, then—Let us endeavor to comprehend that the final globe of globes will instantaneously disappear, and that God will remain all in all.

But are we here to pause? Not so. On the Universal agglomeration and dissolution, we can readily conceive that a new and perhaps totally different series of conditions may ensue—another creation and irradiation, returning into itself—another action and reaction of the Divine Will. Guiding our imaginations by that omniprevalent law of laws, the law of periodicity, are we not, indeed, more than justified in entertaining a belief—let us say rather, in indulging a hope—that the processes we have here ventured to contemplate will be renewed

* "Gravity, therefore, must be the strongest of forces."—See page 161.

forever, and forever, and forever; a novel Universe swelling into existence, and then subsiding into nothingness, at every throb of the Heart Divine?

And now—this Heart Divine—what is it? *It is our own.*

Let not the merely seeming irreverence of this idea frighten our souls from that cool exercise of consciousness—from that deep tranquillity of self-inspection—through which alone we can hope to attain the presence of this, the most sublime of truths, and look it leisurely in the face.

The *phœnomena* on which our conclusions must at this point depend, are merely spiritual shadows, but not the less thoroughly substantial.

We walk about, amid the destinies of our world-existence, encompassed by dim but ever present *Memories* of a Destiny more vast—very distant in the by-gone time, and infinitely awful.

We live out a Youth peculiarly haunted by such dreams; yet never mistaking them for dreams. As Memories we *know* them. *During our Youth* the distinction is too clear to deceive us even for a moment.

So long as this Youth endures, the feeling *that we exist*, is the most natural of all feelings. We understand it *thoroughly*. That there was a period at which we did *not* exist—or, that it might so have happened that we never had existed at all—are the considerations, indeed, which *during this youth*, we find difficulty in understanding. Why we should *not* exist, is, *up to the epoch of our Manhood*, of all queries the most unanswerable. Existence—self-existence—existence from all Time and to all Eternity—seems, up to the epoch of Manhood, a normal and unquestionable condition:—*seems, because it is.*

But now comes the period at which a conventional

World-Reason awakens us from the truth of our dream. Doubt, Surprise and Incomprehensibility arrive at the same moment. They say:—"You live, and the time was when you lived not. You have been created. An Intelligence exists greater than your own; and it is only through this Intelligence you live at all." These things we struggle to comprehend and cannot:—*cannot*, because these things, being untrue, are thus, of necessity, incomprehensible.

No thinking being lives who, at some luminous point of his life of thought, has not felt himself lost amid the surges of futile efforts at understanding or believing, that anything exists *greater than his own soul*. The utter impossibility of any one's soul feeling itself inferior to another; the intense, overwhelming dissatisfaction and rebellion at the thought;—these, with the omniprevalent aspirations at perfection, are but the spiritual, coincident with the material, struggles towards the original Unity—are, to my mind at least, a species of proof far surpassing what Man terms demonstration, that no one soul *is* inferior to another—that nothing is, or can be, superior to any one soul—that each soul is, in part, its own God—its own Creator:—in a word, that God—the material *and* spiritual God—*now* exists solely in the diffused Matter and Spirit of the Universe; and that the regathering of this diffused Matter and Spirit will be but the re-constitution of the *purely* Spiritual and Individual God.

In this view, and in this view alone, we comprehend the riddles of Divine Injustice—of Inexorable Fate. In this view alone the existence of Evil becomes intelligible; but in this view it becomes more—it becomes endurable. Our souls no longer rebel at a *Sorrow* which we ourselves have imposed upon

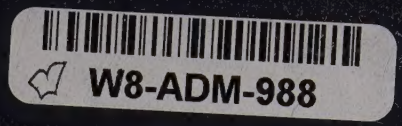
ourselves, in furtherance of our own purposes—with a view—if even with a futile view—to the extension of our own *Joy*.

I have spoken of *Memories* that haunt us during our youth. They sometimes pursue us even in our Manhood:—assume gradually less and less indefinite shapes:—now and then speak to us with low voices, saying:

"There was an epoch in the Night of Time, when a still-existent Being existed—one of an absolutely infinite number of similar Beings that people the absolutely infinite domains of the absolutely infinite space.* It was not and is not in the power of this Being—any more than it is in your own—to extend, by actual increase, the joy of his Existence; but just as it *is* in your power to expand or to concentrate your pleasures (the absolute amount of happiness remaining always the same) so did and does a similar capability appertain to this Divine Being, who thus passes his Eternity in perpetual variation of Concentrated Self and almost Infinite Self-Diffusion. What you call The Universe is but his present expansive existence. He now feels his life through an infinity of imperfect pleasures—the partial and pain-intertangled pleasures of those inconceivably numerous things which you designate as his creatures, but which are really but infinite individualizations of Himself. All these creatures—*all*—those which you term animate, as well as those to whom you deny life for no better reason than that you do not behold it in operation—*all* these creatures have, in a greater or less degree, a capacity for pleasure and for pain:—*but the general sum of their sensations is precisely that amount of Happiness*

* See page 221, paragraph commencing "I reply that the right," and ending "proper and particular God."

which appertains by right to the Divine Being when concentrated within Himself. These creatures are all too, more or less conscious Intelligences; conscious, first, of a proper identity; conscious, secondly, and by faint indeterminate glimpses, of an identity with the Divine Being of whom we speak—of an identity with God. Of the two classes of consciousness, fancy that the former will grow weaker, the latter stronger, during the long succession of ages which must elapse before these myriads of individual Intelligences become blended—when the bright stars become blended—into One. Think that the sense of individual identity will be gradually merged in the general consciousness—that Man, for example, ceasing imperceptibly to feel himself Man, will at length attain that awfully triumphant epoch when he shall recognise his existence as that of Jehovah. In the meantime bear in mind that all is Life—Life—Life within Life—the less within the greater, and all within the *Spirit Divine.*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